THE BRICKBUILDER

INDEX TO VOLUME 19. JANUARY — DECEMBER, 1910

FRONTISPIECES — FULL-PAGE ILLUSTRATIONS.

Giovanni Battista Piranesi, Del.

PLATE ILLUSTRATIONS.

Exterior Views denoted by Ext. Interior Views denoted by Int. Plans denoted by Pl.

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*For additional illustrations not listed above see index of "Illustrations in Letter-Press."

ILLUSTRATIONS IN LETTER-PRESS.

This list does not include certain miscellaneous illustrations made in connection with articles nor those of terra cotta details.

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ARTICLES.

EDITORIALS AND MISCELLANY.

THE BRICKBVILDER

AN ARCHITECTVRAL MONTHLY

VOL. 19

JANUARY
1910

NO. 1

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THE BRICKBUILDER

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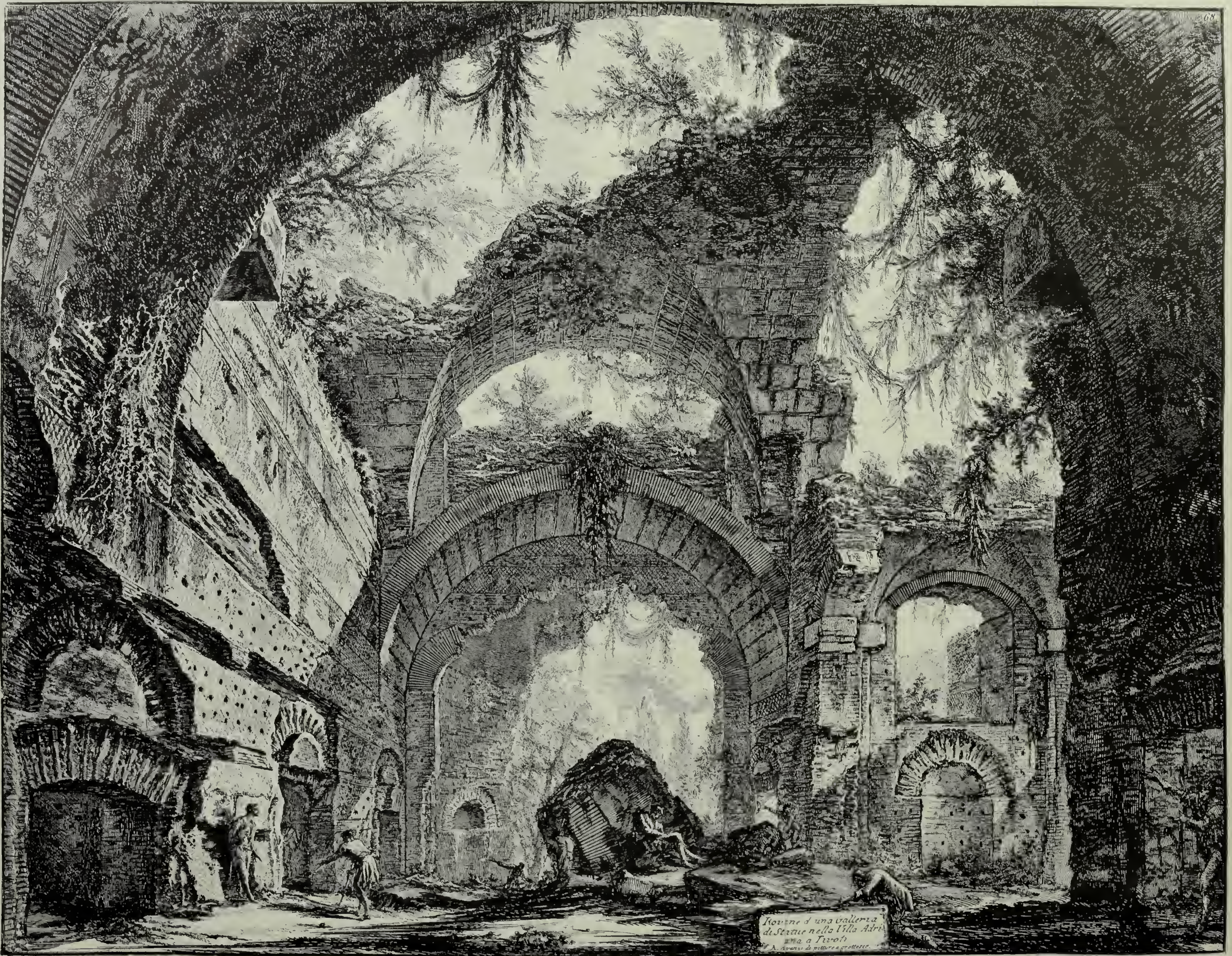
LETTERPRESS



RUINS OF A VAULTED HALL IN HADRIAN'S VILLA AT TIVOLI, NEAR ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

Hadrian (Roman Emperor from 117 to 138 A. D.) traveled extensively throughout the empire, especially devoting attention to literature, philosophy, and the fine arts. The villa at Tivoli, some miles in circumference, was designed to represent whatever of greatest interest and beauty the emperor had met with on his travels. The stamps on the bricks show it to have been built between 127 and 138 A. D. It was probably ruined in 544 when Tivoli was besieged by Totila. Great numbers of its statues and other works of art have since enriched the museums of Europe. The designation of the different buildings and halls of the villa, including the one in Piranesi's

THE BRICKBVILDER

VOL. 19 NO. 1 DEVOTED·TO·THE·INTERESTS·OF·ARCHITECTVRE·IN MATERIALS·OF·CLAY· JANUARY 1910

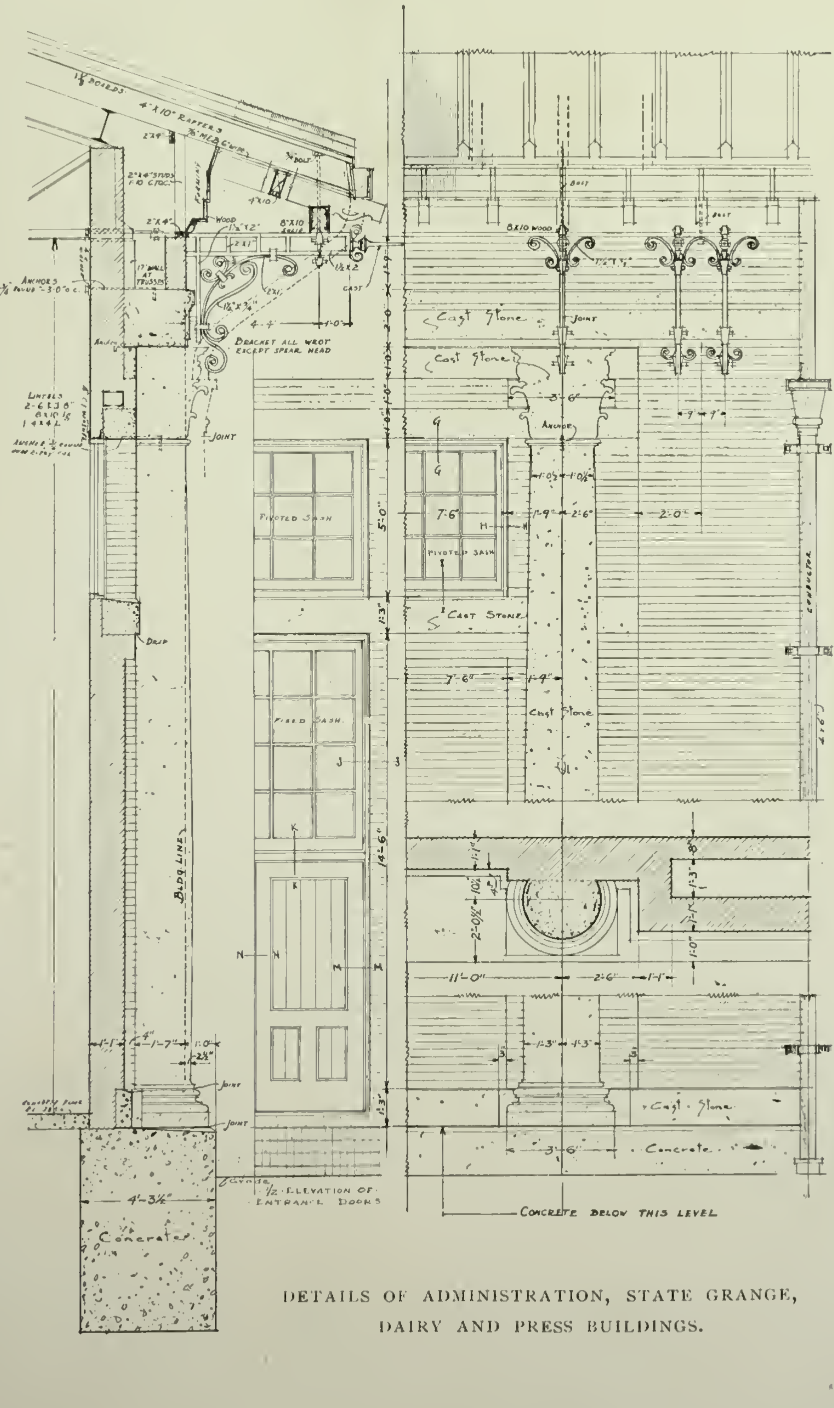
The State Fair Buildings at Syracuse, N. Y.

GREEN & WICKS, ARCHITECTS.

THE New York State Fair Group is emerging from a chrysalis condition into a state of perfection. The first effort was apparent during 1908 in the Manufactures and Liberal Arts Building; the second has been revealed in 1909 in the State Institutions and Dairy Buildings on the opposite side of the spacious Empire State Court. In architectural form and construction, in coloring and in proportion, these three new buildings must appeal to visitors as appropriate to the dignity of the agriculture of the great state of New York.

In the State Institutions Building will be housed the exhibits of twenty-four state departments and institutions. Contiguous to and opening into the State Institutions main room is the State Grange headquarters. Very different are these rooms from the canvas quarters of former years. The lofty auditorium is provided with four hundred easy chairs, tables for lunches, free package checking rooms, and retiring rooms for both men and women.

In a separate building of equal size with the State Institutions Building, to which it is connected by a superb colonnade, is the Dairy department.



DETAILS OF ADMINISTRATION, STATE GRANGE, DAIRY AND PRESS BUILDINGS.

Buildings for expositions and fairs are usually of temporary and flimsy construction. In the exposition class, where used for one season only, this sort of building is all that is required. The structures need only be safe and fitting to their purpose — mere enclosed shelters. But for fair buildings, where used year after year, it is desirable to construct solidly and effectively.

The flimsy structure epoch had been in vogue in the Syracuse State Fair work for many years previous to 1908, but in that and the preceding year a careful review was made of past work, and it was ascertained that in the long run permanent, solidly constructed buildings, placed in accordance with a positive plan, would be more economical and desirable.

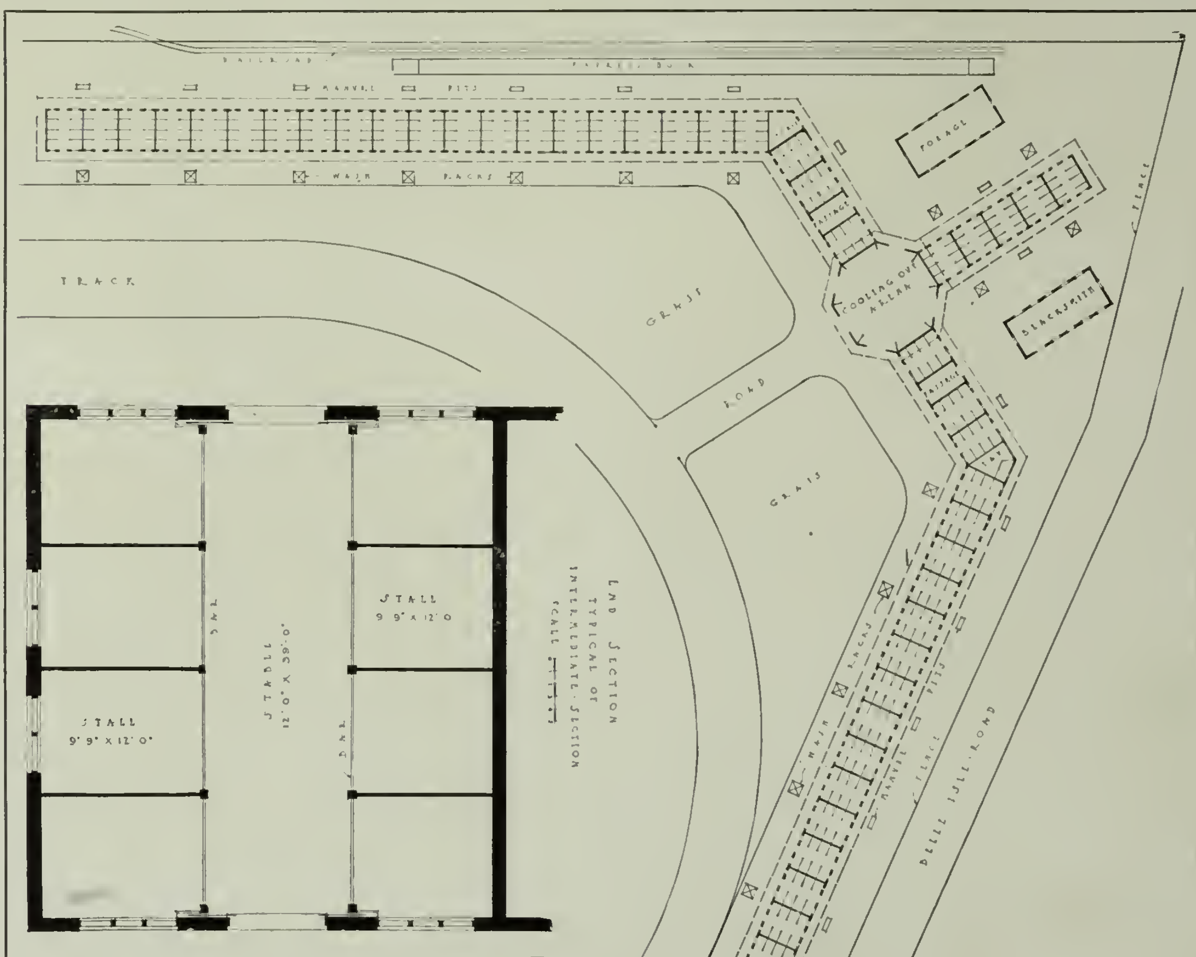
In the spring of 1908 the state began its policy of permanent construction. Appropriations were considered in 1907 for a continuance of the early method of construction, but Governor Hughes, who visited the fair that year, promptly disapproved of the plan, taking the ground that before more money was expended by the state the following items should be observed:

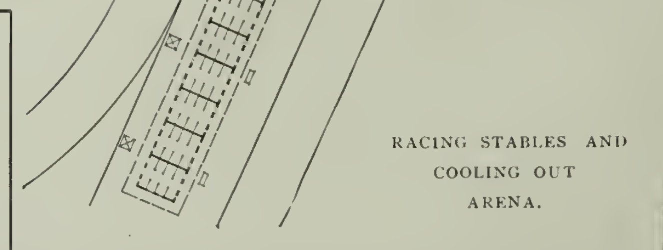
First. That plans should be secured for a comprehensive and artistic grouping of the buildings and a systematic arrangement of the roads and grounds.

Second. That future appropriations should provide funds sufficient to build permanent structures.

Third. That a scheduled estimate for a complete and permanent grouping be made.

With the recommendations of the Governor in view an appropriation was made in the year 1907, and placed in the hands of the State Fair Commission with directions providing for a preliminary competition to select architects to carry out the scheme. Many designs were submitted, but those presented by Green & Wicks, of Buffalo, were chosen. The architects were directed to prepare carefully studied block plans providing for all the various fair departments, and also to prepare a detailed schedule showing the cost of each particular part of the work, thus enabling the Fair Commission to present to the legislature in a well thought out, comprehensive manner, the needs of the fair.





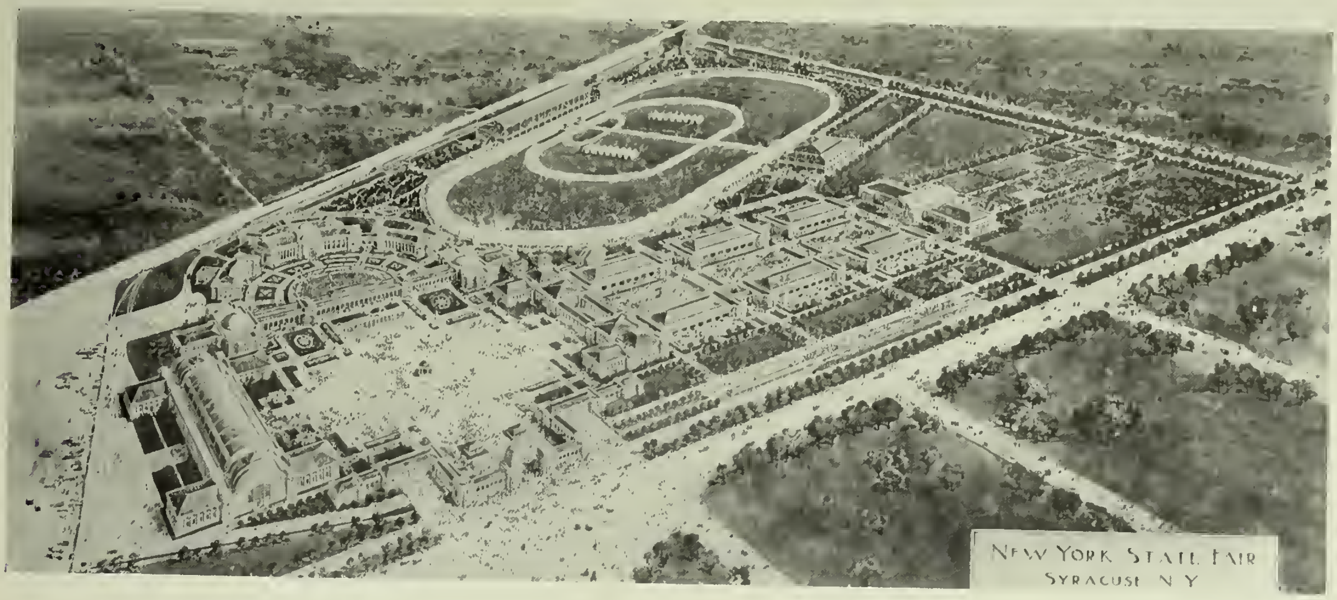
RACING STABLES AND COOLING OUT ARENA.

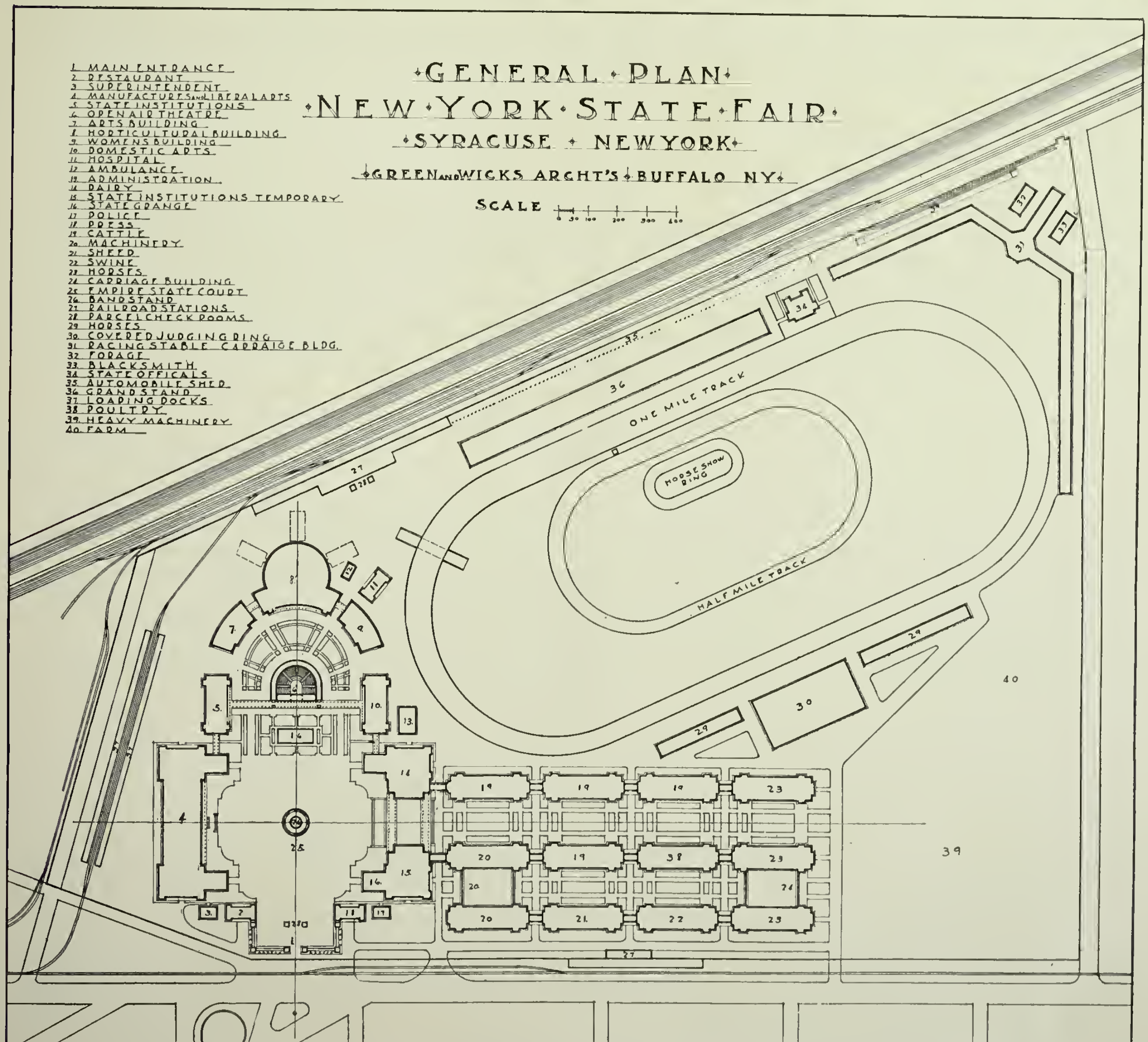
The plans, scale drawings, and details were presented to the legislature in 1908, an appropriation for the new work was obtained, and the first large building, the Manufactures and Liberal Arts Building, measuring 500 feet long and 150 feet wide, was constructed in five months' time.

In 1909 appropriations were made for the Dairy Building, the Grange Building, the State Institutions Building, and the Stables; these buildings were quickly planned, constructed, and used for the fair of 1909.

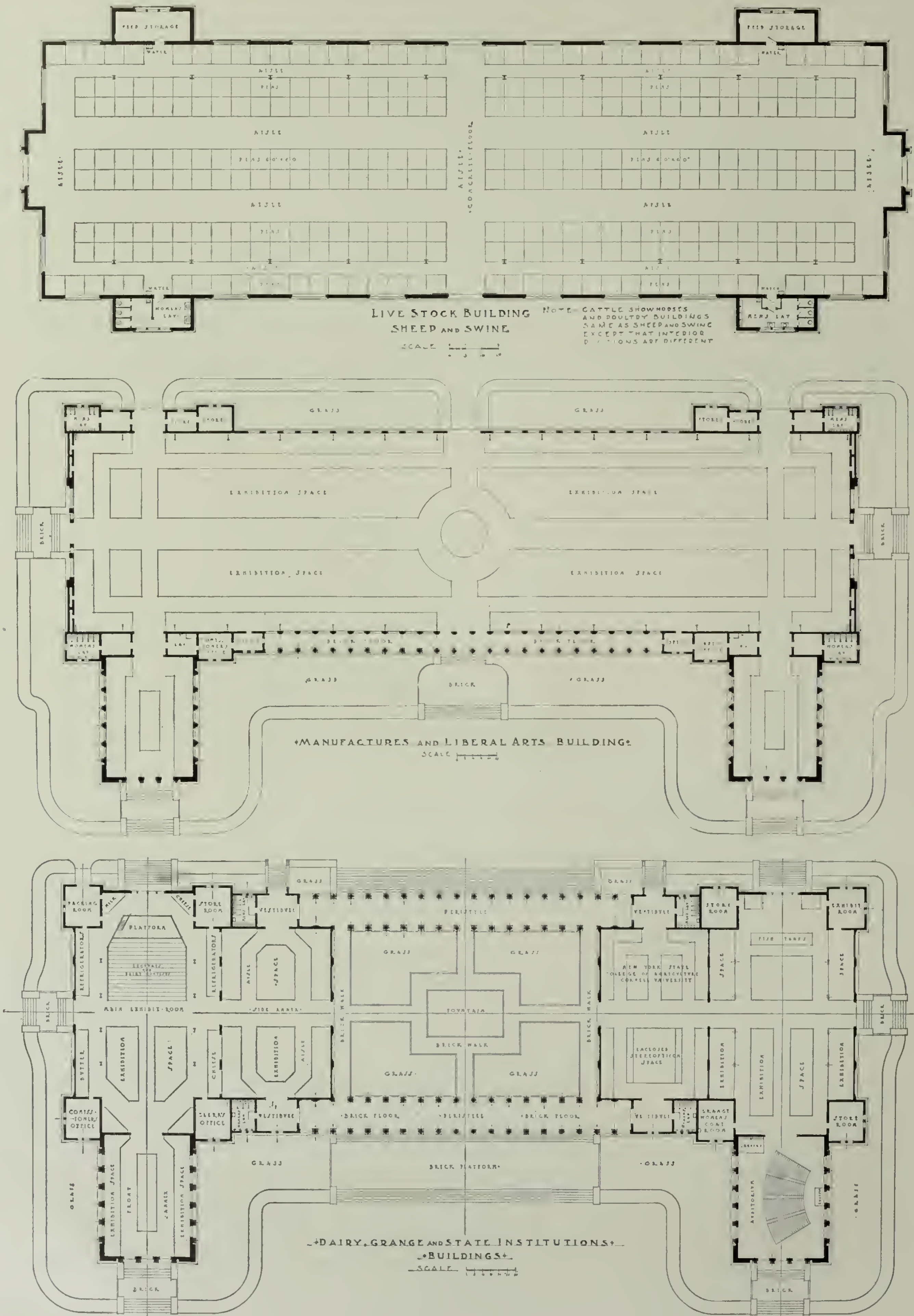
After careful consideration of the whole problem it was finally decided to use on the exterior walls of the buildings a gray brick with a soft yellow tone. The bricks were laid with 1 inch white mortar joints. The pointing was formed with a grooving tool, giving shadow marks over the entire façade. The brick walls are well massed and proportioned and the façades are marked with peristyles and colonnades. The roofs, which are light bronze in color, have wide over-hangs with bracketed cornices, which in combination with the gray brick and stone trimmings have given very satisfactory results.

The schedule and plot plan, which is illustrated, shows the extent of the work undertaken, amounting to about $2,000,000. It is not intended that this work shall be done in one season. The state makes a liberal appropriation from year to year and will continue to do so until the work is fully completed. This is undoubtedly a conservative way to proceed, but the results would be better if all the buildings could be constructed in the same year and under one contract, as one large contract is more economical than many small ones. Besides it would give to the people at once completed buildings for their great fair, and would obviate the necessity, which in itself is expensive, of fitting the old to the new parts. The chief difficulty would be in housing the fair during the year of construction, but if the appropriation could





NEW YORK STATE FAIR, SYRACUSE, N. Y.



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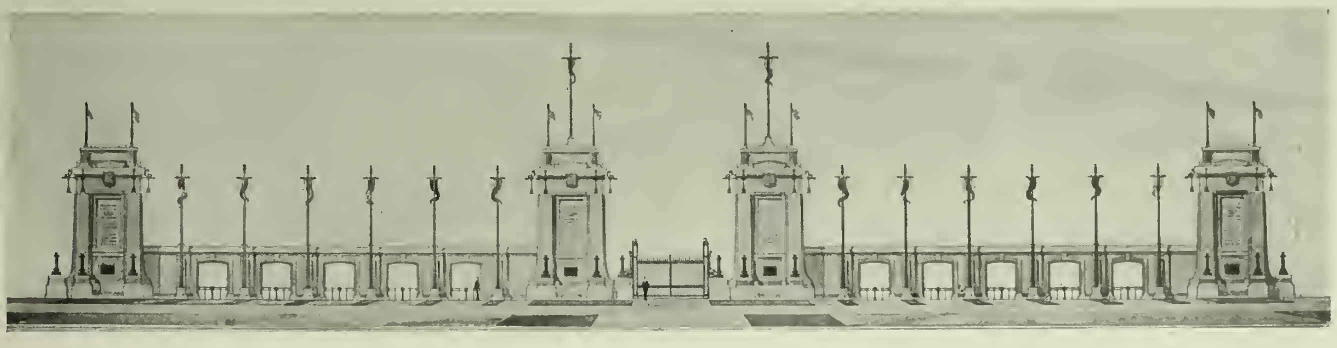
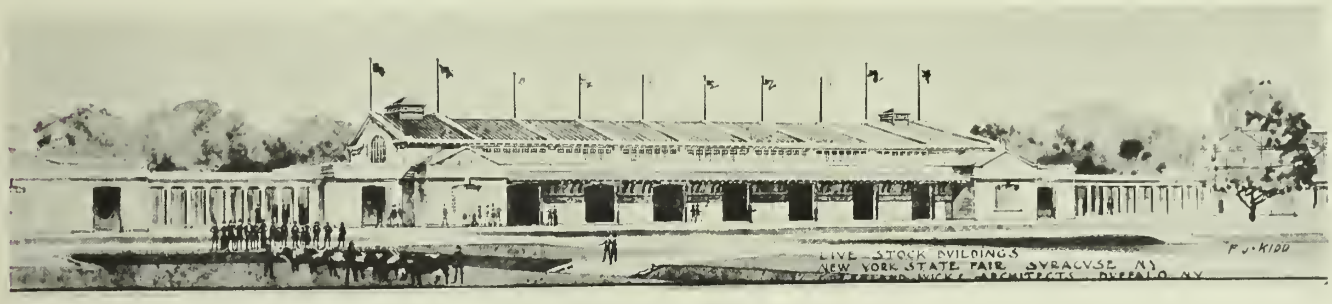
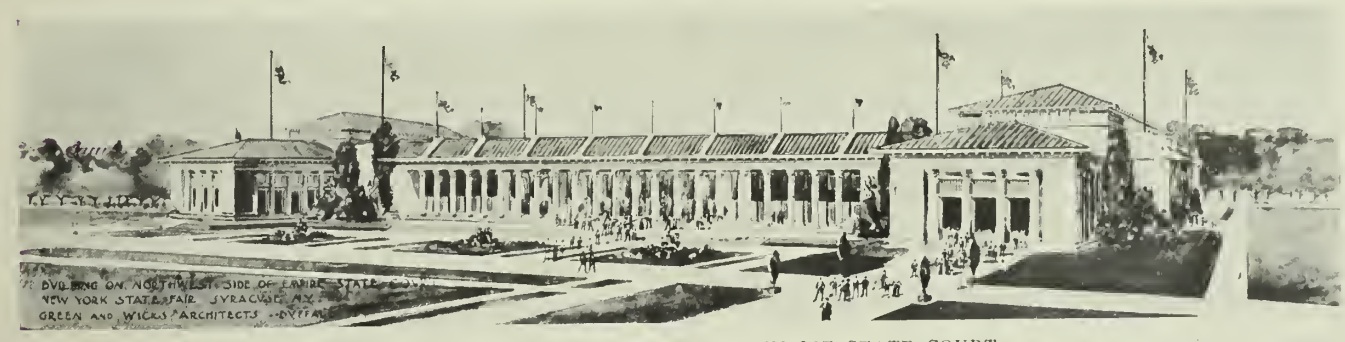


ALTERNATE SKETCH FOR PRINCIPAL ENTRANCE.

RACING STABLES, CARRIAGE BUILDING IN THE CENTER.



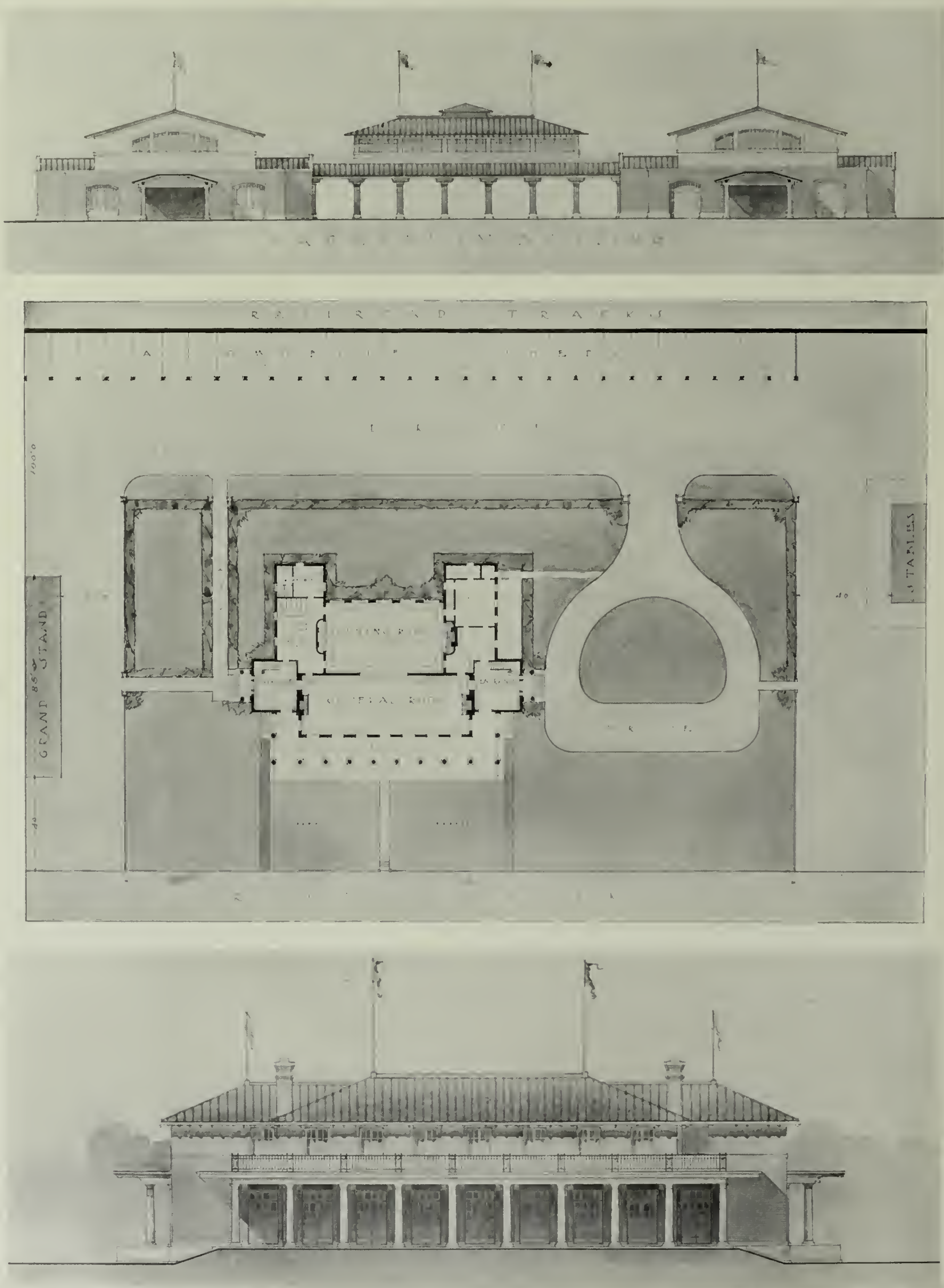
LIVE STOCK BUILDINGS.



BUILDING ON NORTHWEST SIDE OF EMPIRE STATE COURT.

MANUFACTURES AND LIBERAL ARTS BUILDING.

NEW YORK STATE FAIR, SYRACUSE, N. Y.



STATE OFFICIALS' BUILDING.

NEW YORK STATE FAIR, SYRACUSE, N. Y.

SOUTH END DAIRY BUILDING.

MANUFACTURES AND LIBERAL ARTS BUILDING.

DAIRY, STATE INSTITUTIONS, AND GRANGE BUILDINGS.

GRANGE BUILDING.
FRONT ANNEX TO STATE INSTITUTIONS BUILDING.

INTERIOR PERISTYLE.
BETWEEN DAIRY AND STATE INSTITUTIONS BUILDINGS.

COLONNADE.
MANUFACTURES AND LIBERAL ARTS BUILDING.

NEW YORK STATE FAIR, SYRACUSE, N. Y.

be made so that the work could be started immediately after the close of a fair the entire group could be completed in one year's time.

The main feature of this group is the large Empire State Court, 500 feet wide, about which the principal buildings are placed.

Passing through the main entrance, the Manufactures and Liberal Arts Building is on the left, and the Dairy, Grange, and State Institutions Buildings on the right, while the Horticultural Building is in the semicircular grouping at the end, giving altogether a magnificently formed court. On the cross axis to the right are the Live Stock Buildings, giving a long and beautiful vista. The race tracks are placed on one of the radial axes leading from the center of the amphitheater end of Empire Court. The Stables are placed at the far end of the race track, somewhat away from the main grouping.

The entire group, except for Stables, is compact, and each building is easy of access from the large courts.

One wishing to "do" the fair methodically may start at the right or left of the main or architectural entrance, or at any other part of the grouping for that matter, and continue through peristyle and buildings until the place of beginning is reached.

Peristyle passages are desirable in sunny or inclement weather, and they give a great amount of architectural effect to the buildings. These features, with the harmonizing colors of material selected, gave the architects an opportunity, which they have made good use of. While dignified, there is a certain gayety about the whole which seems to belong to fair groups.

The interiors of the buildings are plain and simple, and as many large spaces are obtained as possible without posts or piers.

The buildings are clerestoried or skylighted so that groups of exhibits may be placed, when desired, against the outside walls. The walls of the interior of the buildings are laid up in gray brick, which look much better and reflect light more clearly than would red brick.

The members of the State Fair Commission who have the direction of this work are: Lieut.-Gov. Horace White, Syracuse; Charles A. Wieting, Cobleskill; Ira Sharp, Lowville; Abraham E. Perren, Buffalo; DeForest Settle, Syracuse; Com. of Agriculture, Raymond A. Pearson, Albany; William Pitkin, Rochester. A. E. Perrin, who is chairman of the Roads and Grounds Commission, has charge of the construction of the buildings.

The schedule of buildings to be constructed and estimated cost of each is given in the table.

ESTIMATED COST

OF ENTIRE DEVELOPMENT AND COMPLETION AS SHOWN BY PLAN.

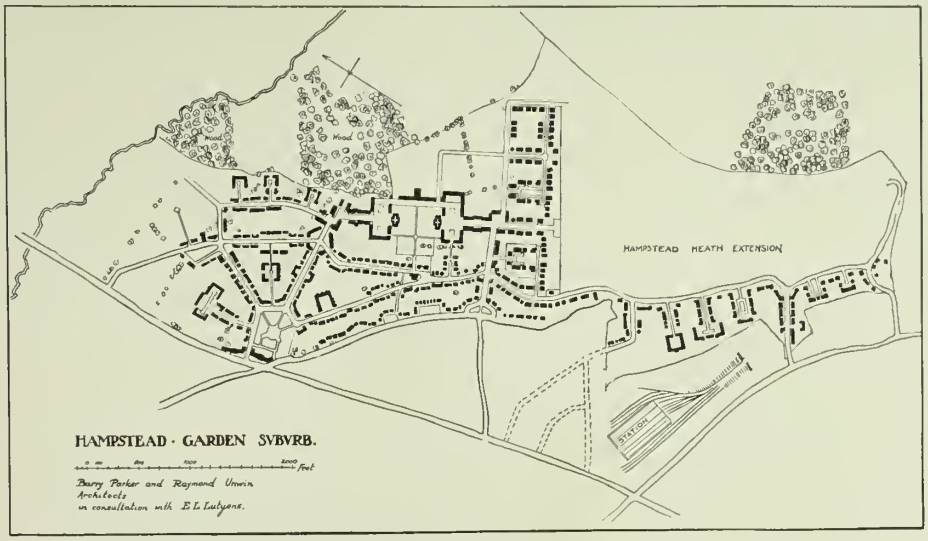
No.		Size.	Sq. Ft. Asked For.	Actual Sq. Ft.	Cost Per Sq. Ft.	Total.
1	Administration	50 x 100	4,000 1,500	5,000 Two stories 10,000	$4.00	$40,000
2	Hospital, two stories	50 x 100	5,000	5,000×2=10,000	5.00	25,000
	Ambulance, two stories	25 x 50	Not asked for	1,250×2= 2,500	5.00	6,250
	Fire House, two stories	25 x 50		1,250×2= 2,500	5.00	6,250
3	State Grange, with large hall	60 x 75 Two stories	7,500	4,500 4,500 9,000	2.75	25,000
4	Manufactures and Liberal Arts	160 x 500	80,000	80,000		
	With two front annexes	60 x 75 One story		9,000 89,000	2.50	222,400
5	Live Stock Pavilions, Cattle, Sheep, and Swine	75 x 275 Six buildings	200,000	123,750		
	Six annexes	80 x 125 One story		60,000 183,750	1.00	183,750
5	Show Horses Annex	150 x 400 100 x 160	75,000	60,000 15,000 75,000	2.00	150,000
5	Race Horses		75,000	20,800		
	Two buildings	40 x 260		23,200		
	Two buildings	40 x 290		31,400		
	One building	100 Round		75,400	1.00	75,400
	Covered Judging Ring, including 10,000 square feet of sheds	180 x 350	Not asked for	63,000*	2.50	157,500
6	Dairy Building	100 x 150	10,000	15,000		
	Annex	75 x 125 One story		9,400 24,400	2.50	61,000
7	Horticultural Building	75 x 300	75,000	22,500		
	One Circular Annex	125 Round		40,000 62,500	2.50	156,250
8	Poultry, one story	140 x 175	20,000	24,500		
	Press Building, two stories	60 x 75		4,500 29,000	3.00	87,000
9	Art Building	75 x 150 One story	10,000	11,250	3.00	33,750
10	Women's Building	75 x 150 One story	10,000	11,250	3.00	33,750
11	Restaurant	50 x 100 Two stories	5,000	5,000 5,000 10,000	4.00	40,000
	Must be considered as part of Main Entrance (No. 26)					
12	Model Farm Barn	50 x 100 One story	5,000	5,000	2.00	10,000
13	Space for Farm Implements		200,000	197,000		5,000
14	Open Air Theater Must be built with Peristyle and Items Nos. 19 and 20	180 ft. Round	3,000 Seats 5,000	20,800	2.00	41,600
15	Sanitary Buildings Four, each $2,500					10,000
16	Trackage Freight Platform	20 x 470 x 2		10,000 18,800		10,000
17	Railroad Station, Waiting Rooms, and Platforms					25,000
18	Police Building and Other Services	35 x 60 Two stories	2,100	2,100 2,100 4,200	2.50	10,500
19	State Institutions One-half Peristyle	75 x 200 25 x 125	20,000	15,000×2=30,000 6,500 21,500	3.00	64,500
20	Domestic Arts Building One-half Peristyle	75 x 200 25 x 125	20,000	15,000 6,500 21,500	3.00	64,500
21	Superintendent's House and Other Service	35 x 60 Two stories	1,500	2,100 2,100 4,200	2.50	10,500
22	Parcel Check Rooms Four Buildings.	20 x 20 One story	1,000	1,600	2.00	3,200
23	Press Building. See Poultry Building.	Included in Item No. 8				
24	One Band Stand	30 x 30		900	2.00	1,800
	One Band Stand	80 Round		5,026	2.00	10,000
25	Judging Stand	30 x 30		900	2.00	1,800
26	Main Entrance	20 x 500		10,000		25,000
27	Fountains, Pools, Canals, etc.					25,000
28	Grounds, Grading, Planting, etc.					175,000
29	Roads and Walks					50,000
					Total	$1,846,700

* Madison Square Garden 200 × 300 = 60,000 sq. ft.

The Hampstead Garden Suburb.

BY R. RANDAL PHILLIPS.

A GREAT deal has been said, and a great deal has not been said, about the Garden Suburb or Garden Colony at Hampstead, on the northwestern side of London. The movement from which it springs is rather a social movement than an architectural one, and those who have been talking most about it have concerned themselves chiefly with the social aspect of the scheme. For that reason some people (among whom the present writer is disposed to count himself) have started with an undefined prejudice against the place, this prejudice arising from the remembrance of the work which a certain class of big-tie and homespun architects have done elsewhere in the country, with the fostering approval of a band of supporters. Let it be said at once there is always a taint of the crank about these zealots. They are extremists, and when they touch architecture they do so in an extreme way. They persist in shutting their eyes to the actual face of things. The problem they set out to solve is one concerning town-dwellers, yet they invariably seek a solution in country models, and by doing so they alienate a great number of people who, while recognizing very clearly the deficiencies and the stupidities of the ordinary suburban house, are not so foolish as to imagine themselves to be goatherds or country laborers.

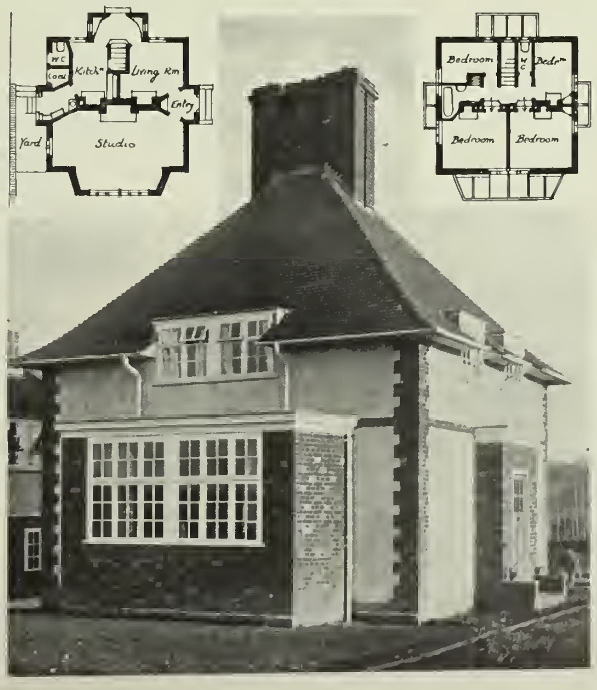


It is one thing on a summer day to walk through an English village where the charm of the old houses remains undisturbed by modern invasions; where the eye sees time-stained thatch, lime-whitened walls overgrown with rose and with clematis; a garden filled with flowers in sweet profusion; and within the house a quaint common-room or kitchen, with its simple furniture, its bare floor, and perhaps its ingle-nook all so artless, yet so abounding with art in a real sense — so unpretentious, yet so satisfying. But that is largely a mood of the moment and of the place which inspires it, and it is essentially a part of the life of the cottager and his family who are the central figures of this domestic scene. But town-dwellers are not cottagers. Their lives may be needlessly complex, their luxuries far too many; but you cannot alter that in a stroke. You cannot, indeed, have at one and the same time the simplicity of the rustic and the culture of the other class, and the attempt to put the latter into a house created out of the simple life of the former is and always will be futile.

There is more than a touch of this attempt at the Hampstead Garden Suburb. In some cases the aversion to any degree of symmetry has led to planning of the most rambling description, to "restraint" in design which becomes bare ugliness, to "variety" in treatment which is mere patchwork. But having thus given some indication of the demerits of the scheme, fairness demands the admission that it offers much that is commendable and enjoyable.

Taken as a whole, it is unquestionably a great advance on the ordinary town suburb. The houses, if they err in some cases, are generally of suitable design; they are soundly built with good materials, they are spread about with green spaces, and there is a sense of unity about the suburb which is distinctly gratifying.

Walking through this garden-colony, the remembrance of the ordinary suburb comes to mind, and one makes a mental comparison between this place and the customary conglomeration of hard-



HOUSE BY GEOFFRY LUCAS, ARCHITECT.

HOUSE BY T. M. WILSON, ARCHITECT.

featured villas entrenched in monotonous order, approached by those 10 foot drives, with serried ranks of Lobelia and Calceolaria on either side. The change is refreshing.

Hampstead is the highest ground around London, and consequently the driest and the healthiest. The Heath is a wide preserve against the inroads of the speculating builder, and it is just on the boundary of the Heath that the suburb is being established. The promotion of the scheme is due to the Hampstead Garden Suburb Trust — a public-spirited body of private individuals.

The trust was formed about five years ago, at a time when a large tract of country beyond the Heath was in danger of being spoiled by the extension of the "Tube" and the succeeding exploits of house builders. Parliamentary sanction was obtained, and an area of 240 acres was acquired by the trust at a cost of $560,000. Messrs. Barry Parker and Raymond Unwin were appointed architects to the trust, and in consultation with Mr. E. L. Lutyens they drew up the plan which is here reproduced. Contrary to the usual practice when new buildings are to be erected, the greatest care was taken to preserve the trees and hedges on the estate and to develop the plan in relation to the existing features. The plan, indeed, wanders too much. There is not enough symmetry in it. It lacks an amount of regularity which would be pleasing — a defect which is more evident when actually viewing the suburb than when inspecting a plan of it. The roads are bordered with trees, judiciously planted, and by special sanction grass margins are added to them in a way which the usual local by-laws render impossible.

The development of the estate is being undertaken primarily by the Garden Suburb Development Company, whose method of working is quite different from the usual method of building estate companies. In the first place they put themselves in communication with architects whose domestic work was known and approved, and by allocating a series of plots to each they acquired an excellent series of designs.

The houses, it will be seen, are carefully and pleasingly designed. In the majority of cases the English cottage has been taken as a standard, or at least as an inspiration, while others follow on eighteenth-century lines. In their present condition they are necessarily more or less harsh, being so new, but when the shrubs and plants have grown up about them, and when the greens around which some of them are planned have been brought into condition, the effect will be greatly enhanced, and the suburb will gain much in appearance. Nothing, however, will ever alter the smallness of the rooms in some of the houses. This diminutiveness, in fact, is ludicrous in certain instances. There are living rooms so Lilliputian that a most moderate-sized table surcharges them, and the occupants, so steeped in the "simple life," have to get in where they can. These cases illustrate the crank element in the suburb already referred to. And the same thing is seen in some of the bedrooms, where the smallness of the casement window is made still more evident by the insistence of a modern Sheratan dressing-table which backs against it. Thus the revulsion from the big sash window of suburbandom!

HOUSE BY E. GUY DAWBER, ARCHITECT.

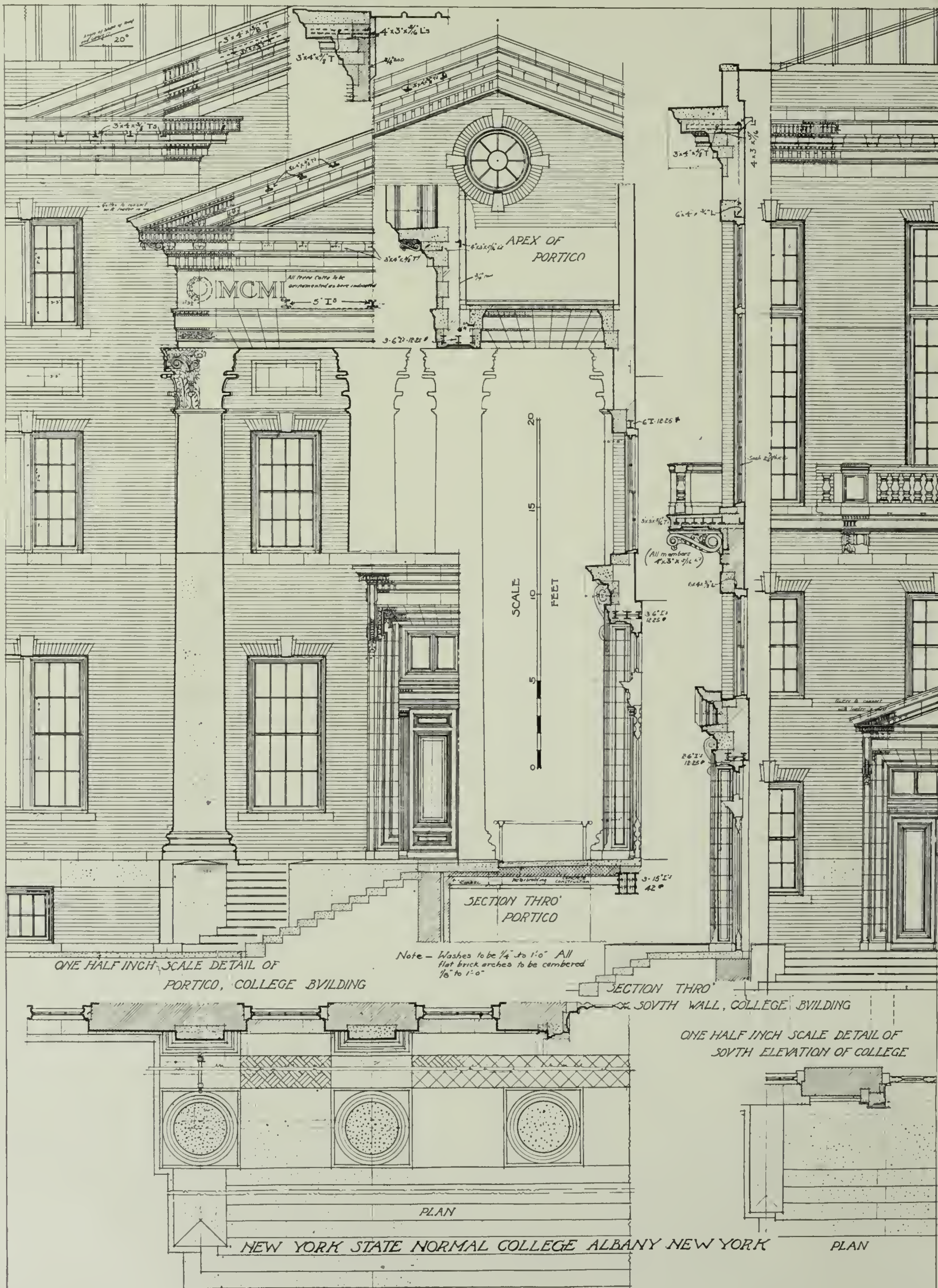
One very interesting building is "Waterlow Court," a block of flats for "working ladies" which has been designed by Mr. Baillie Scott. It is built around a large square grass plot, and the

"WATERLOW COURT," BY M. H. BAILLIE SCOTT, ARCHITECT.

NEW YORK STATE NORMAL COLLEGE, ALBANY, N. Y.

ALBERT R. ROSS, ARCHITECT.

GEORGE L. HEINS & FRANKLIN B. WARE, STATE ARCHITECTS



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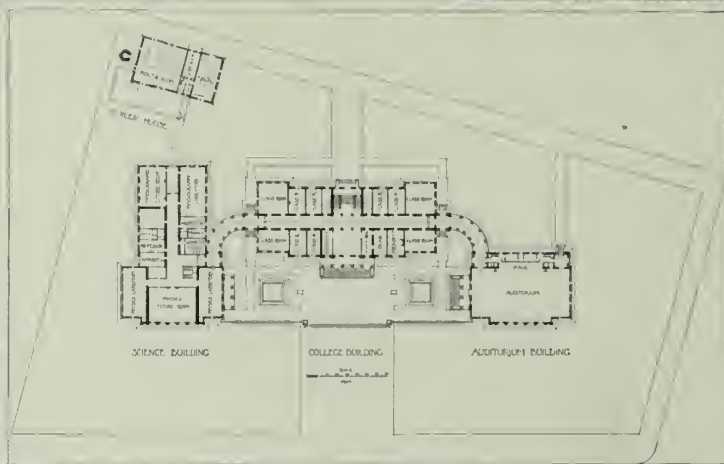

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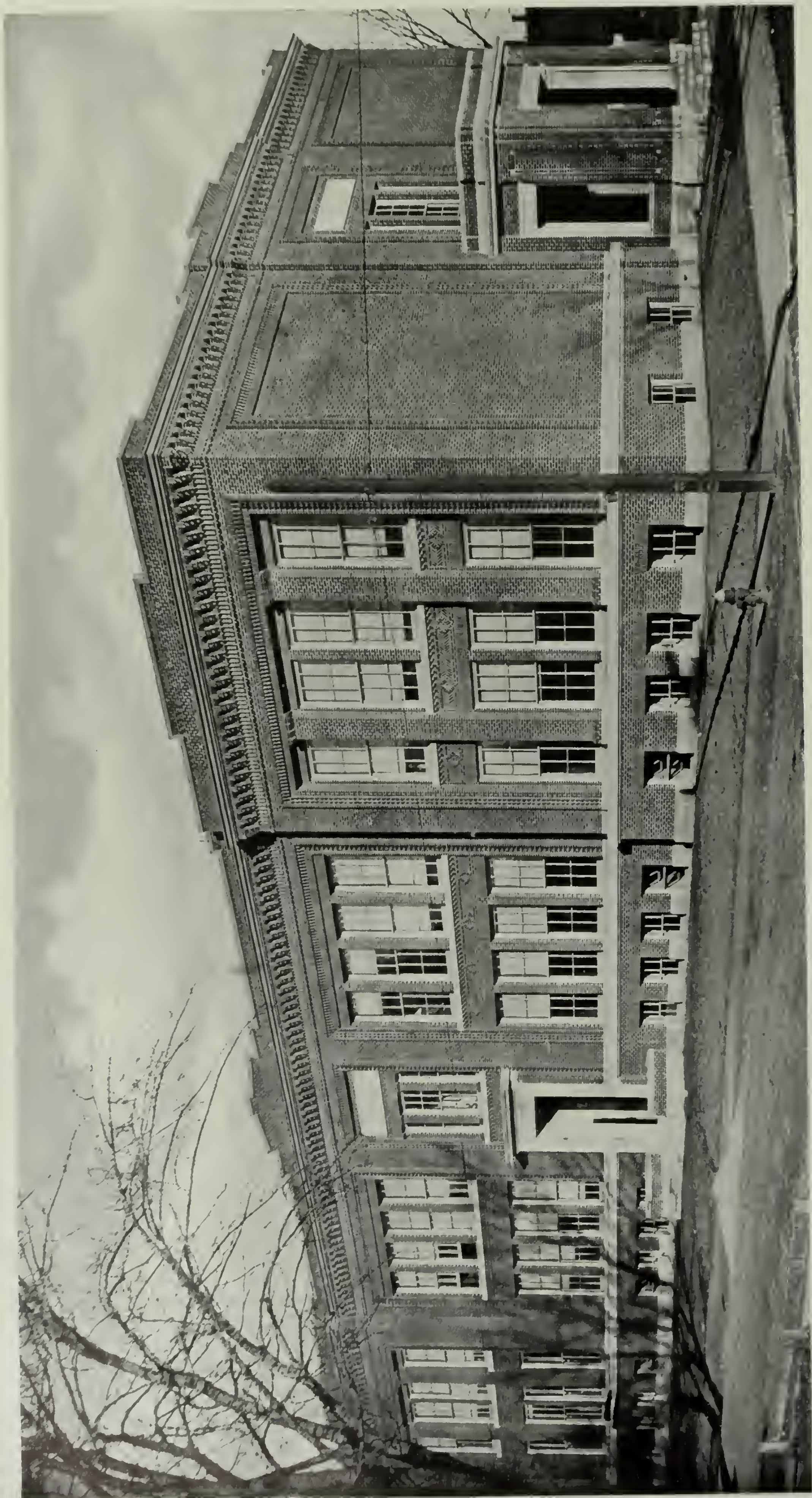
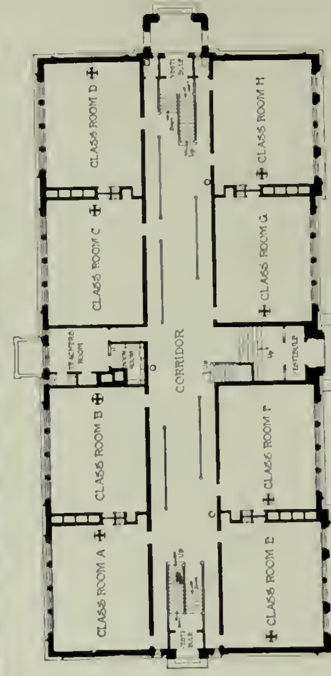




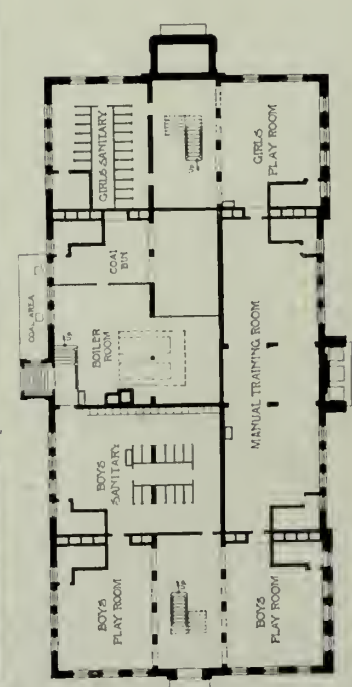
PLAN OF FIRST STORY

WILLIAM R. PLUNKETT SCHOOL.

PITTSFIELD, MASS.

HARDING & SEAVER,

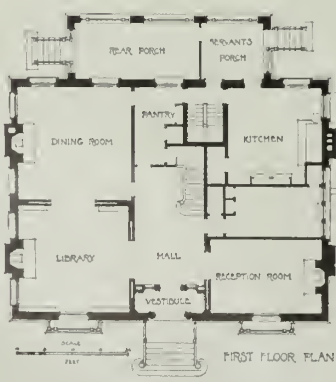
ARCHITECTS.



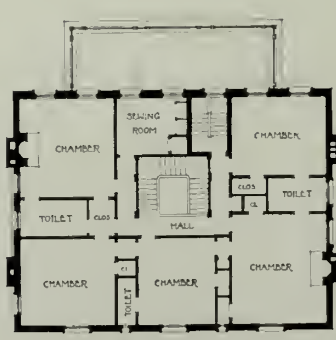
PLAN OF BASEMENT

HOUSE AT
BROOKLYN,
N. Y.

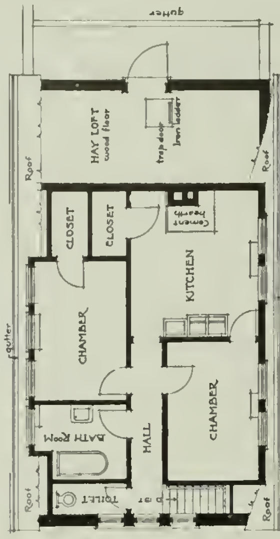
HERTS & TALLANT,
ARCHITECTS.



FIRST FLOOR PLAN

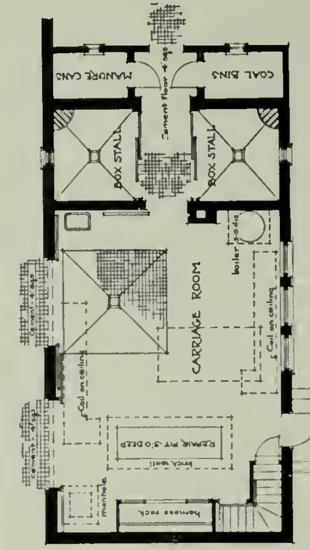


SECOND FLOOR PLAN



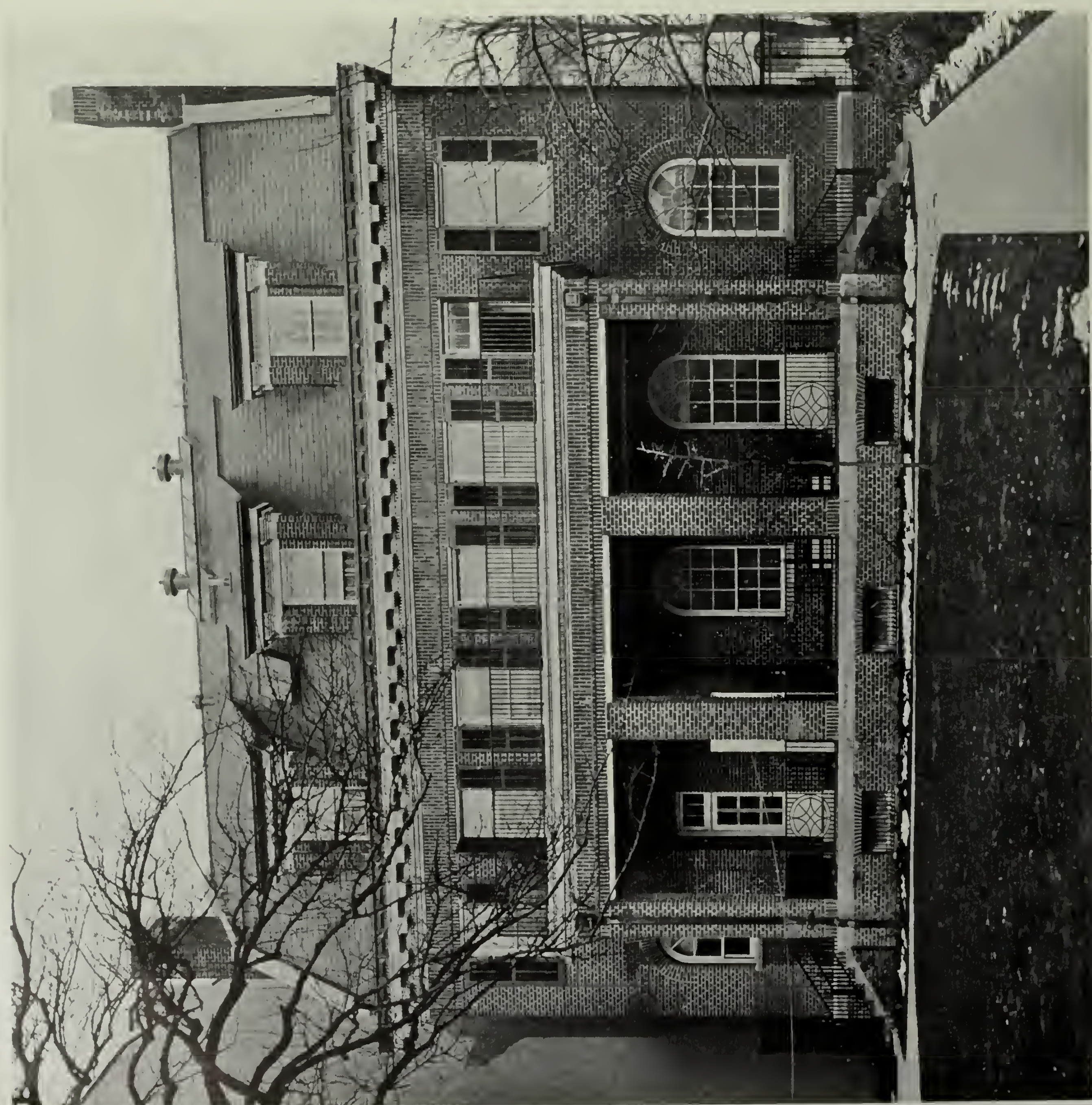
SECOND FLOOR PLAN

SCALE 0 5 10 20 30 FEET



FIRST FLOOR PLAN

GARAGE.



GARDEN FRONT, HOUSE AT BROOKLYN, N. Y.

HERTS & TALLANT, ARCHITECTS.

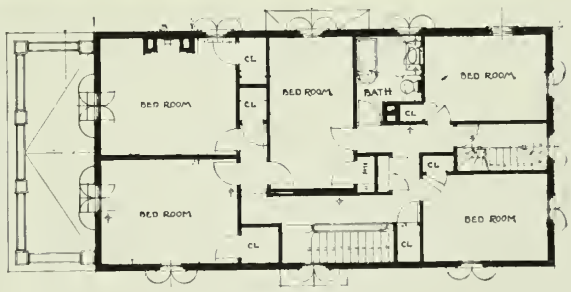
HOUSE AT SCHENLEY FARMS, PITTSBURG, PA.

JANSSEN & ABBOTT, ARCHITECTS.

FIRST FLOOR PLAN

SECOND FLOOR PLAN

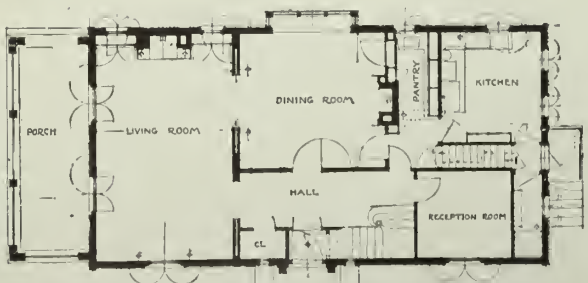
HOUSE AT SCHENLEY FARMS, PITTSBURG, PA.
JANSSEN & ABBOTT, ARCHITECTS.



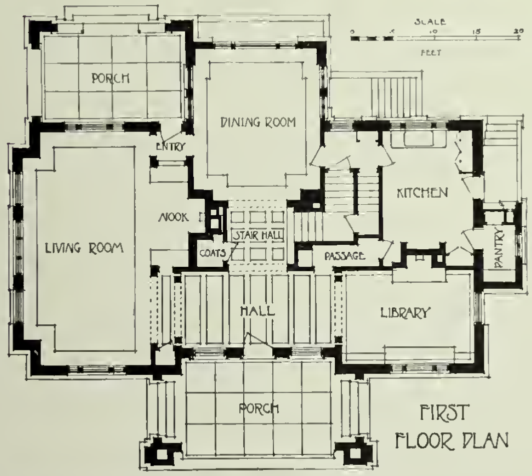
SECOND FLOOR

HOUSE AT ST. GEORGE,
STATEN ISLAND, N. Y.

HARRY S. WATERBURY
ARCHITECT.



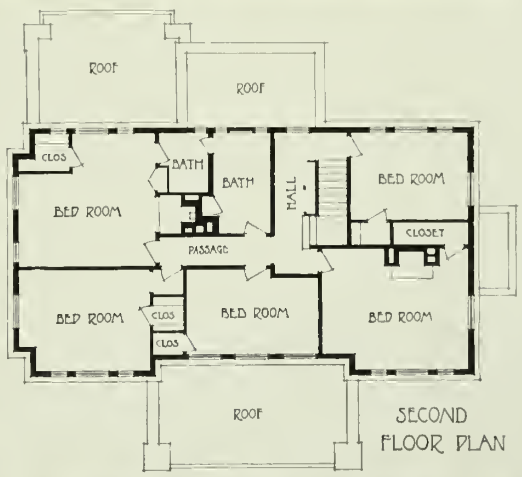
FIRST FLOOR PLAN



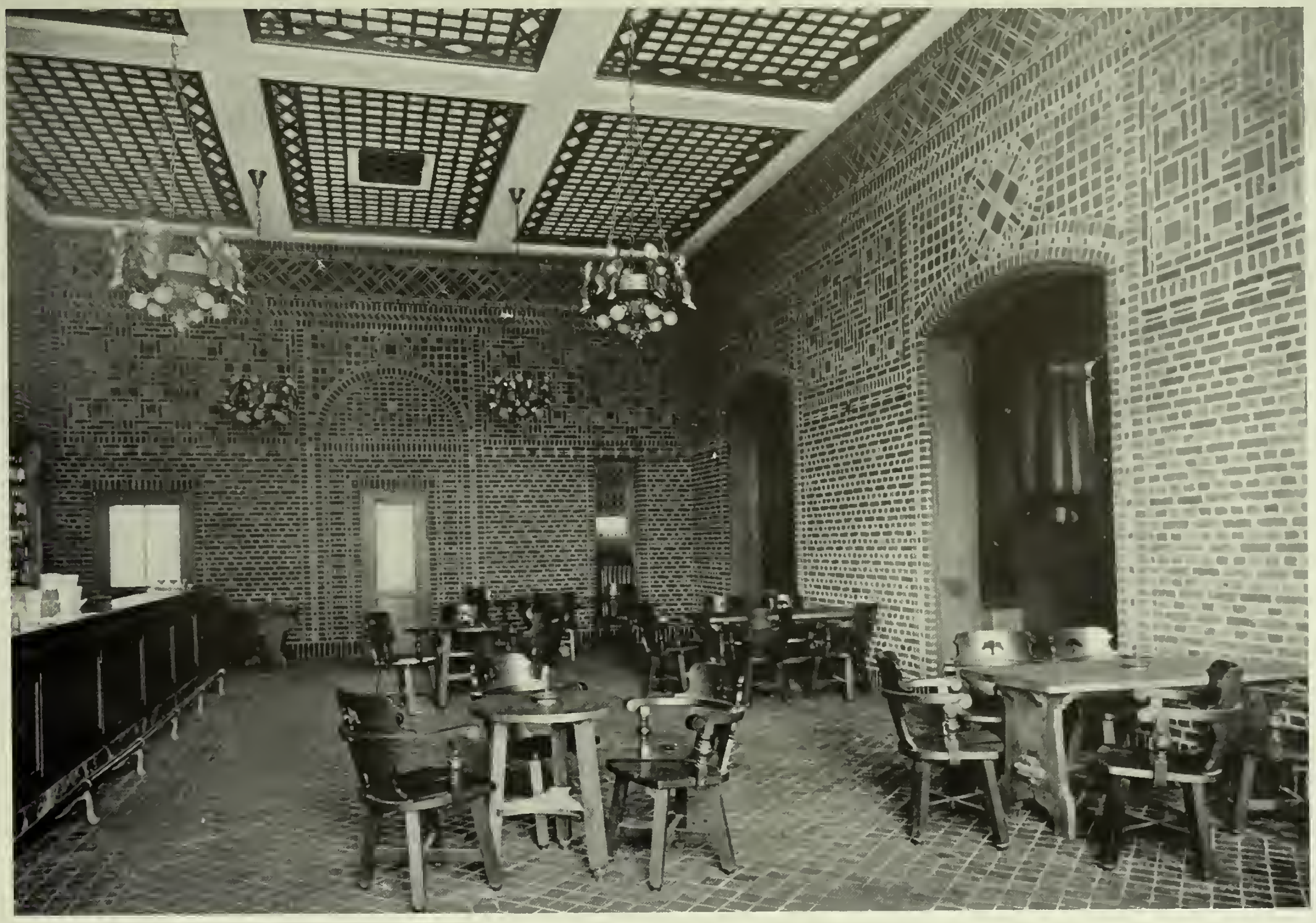
FIRST FLOOR PLAN

HOUSE AT RIVERSIDE, ILL.

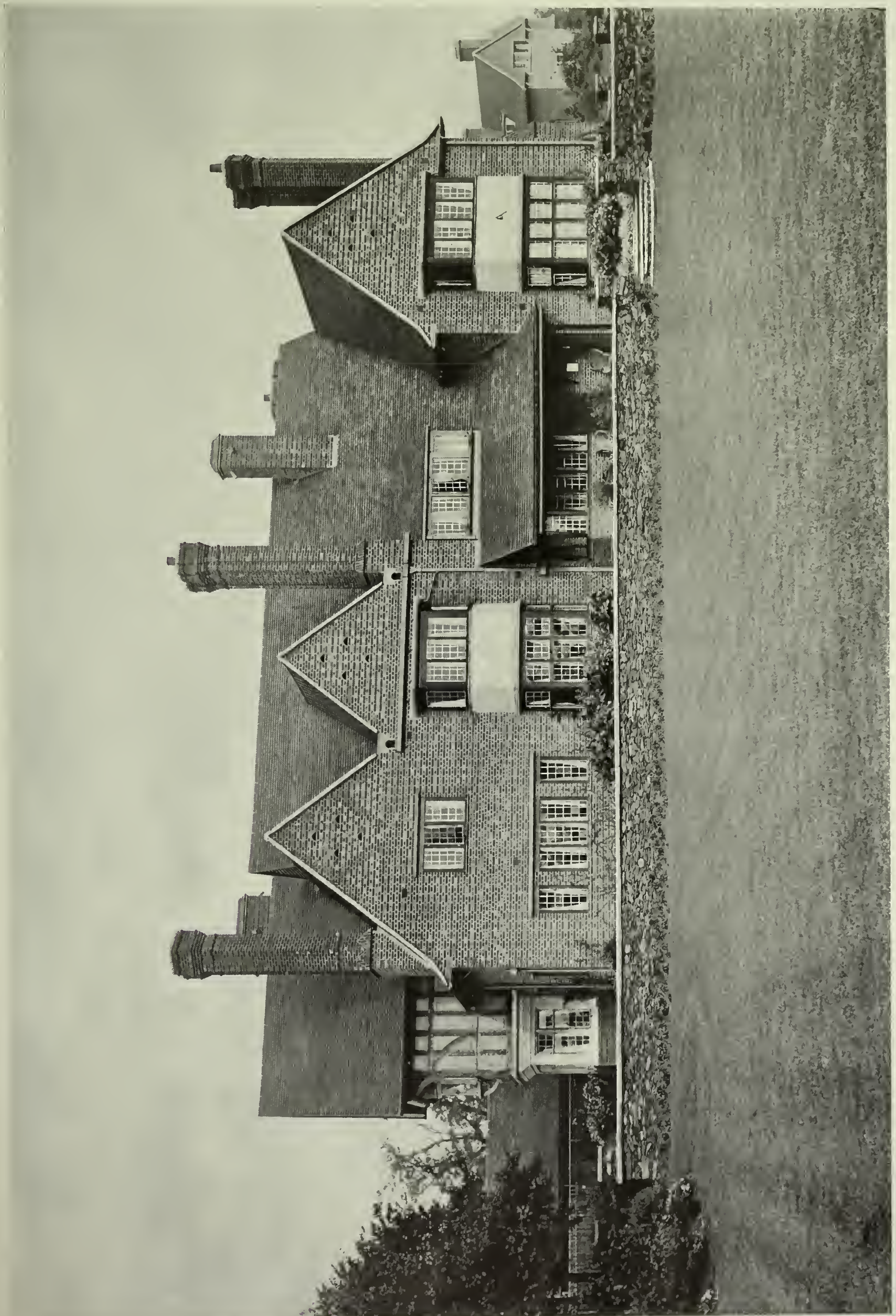
TALLMADGE & WATSON, ARCHITECTS.



SECOND FLOOR PLAN



TAP ROOM, HOTEL BELVEDERE, BALTIMORE, MD.
PARKER, THOMAS & RICE, ARCHITECTS.



HOUSE NEAR LEICESTER, ENGLAND.
STOCKDALE HARRISON & SONS, ARCHITECTS.

HOUSE NEAR LEICESTER, ENGLAND.
STOCKDALE HARRISON & SONS, ARCHITECTS.

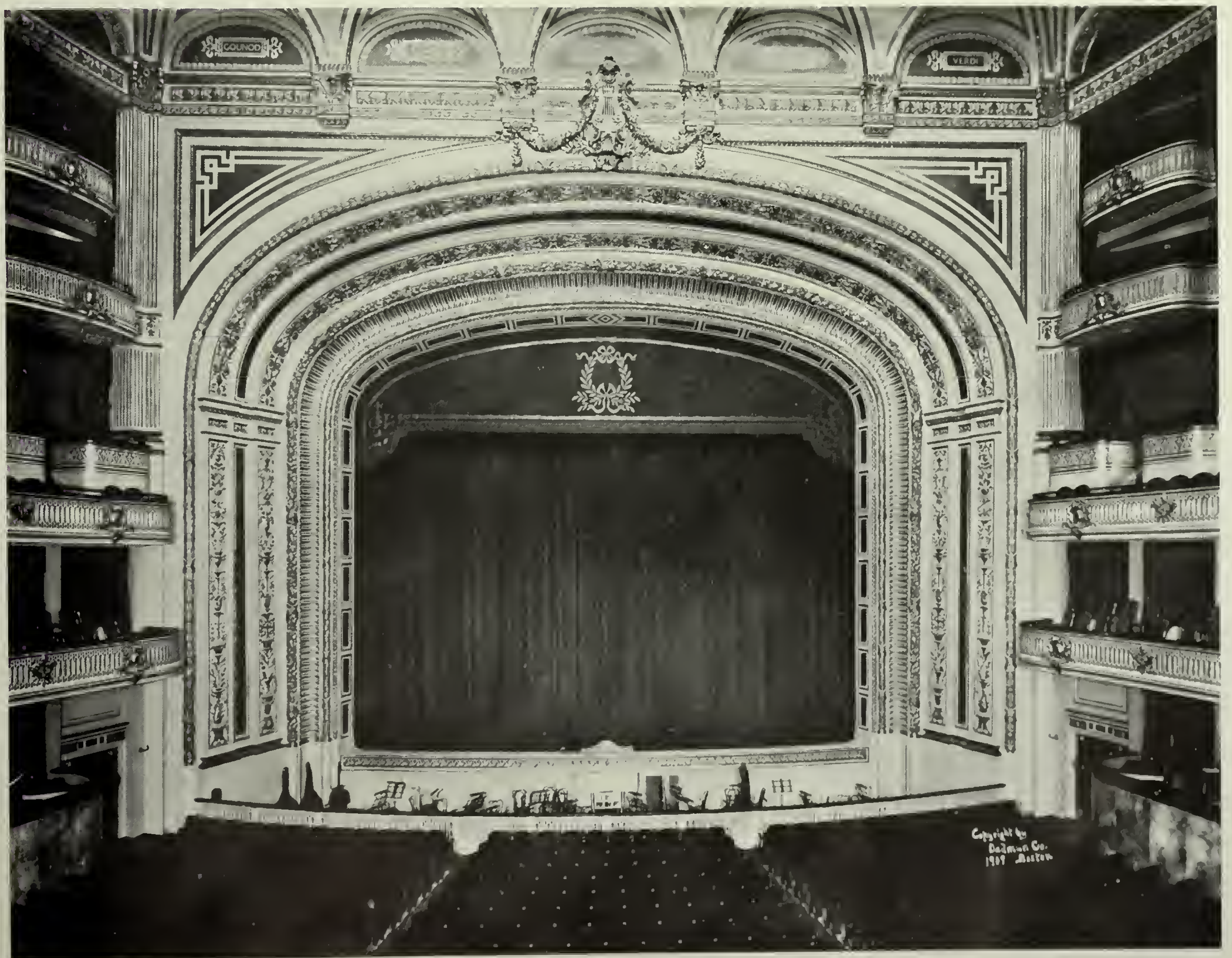
BOSTON

OPERA HOUSE,

BOSTON, MASS.

WHEELWRIGHT & HAVEN,

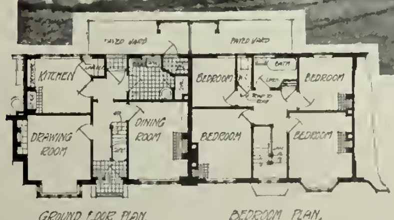
ARCHITECTS.



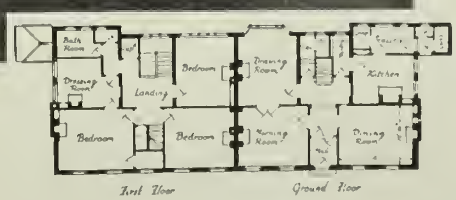
HOUSES, MICHAEL BUNNEY AND C. C. MAKINS, ARCHITECTS.

"WATERLOW COURT," M. H. BAILLIE SCOTT, ARCHITECT.

A TYPICAL VIEW.



HOUSES BY MICHAEL BUNNEY AND C. C. MAKINS, ARCHITECTS.



HOUSES BY GEOFFRY LUCAS, ARCHITECT.

HAMPSTEAD GARDEN SUBURB, ENGLAND.

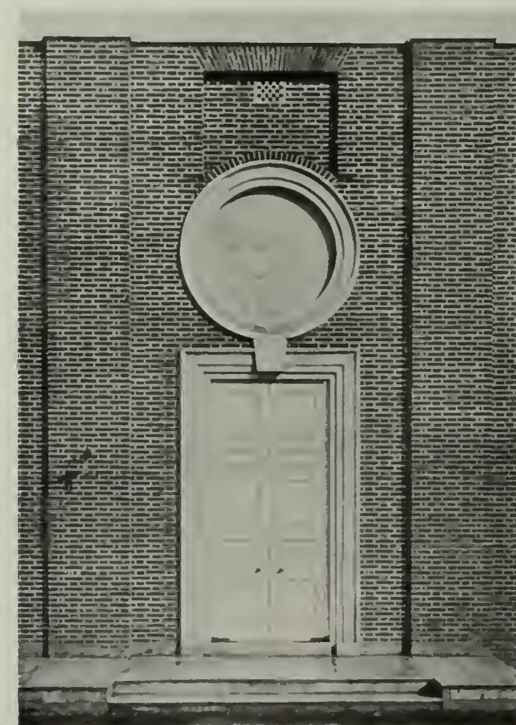
enclosure possesses all the charm of a college quadrangle. Other blocks, more or less similar in grouping, have been designed by Mr. Geoffry Lucas, Messrs. Michael Bunney & C. C. Makins, Messrs. Barry Parker & Raymond Unwin, and Mr. Guy Dawber.

On the highest portion of the estate there is a plateau which is to be laid out as the Central Square. The buildings to be erected around it have been designed by Mr. Lutyens. On one side is the institute, a fragment of which is included among the accompanying illustrations, though it should be pointed out that the detail shown is really a part of what will eventually be the inner porch of the building. To the south of the square is the Episcopal church, now being built; to the north the Free church; while the remaining side will be occupied by another group of public buildings.

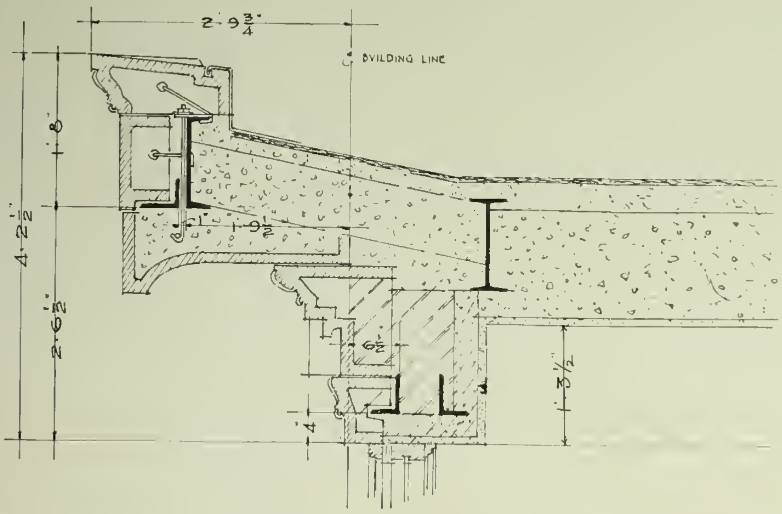
HOUSE BY ARNOLD MITCHELL, ARCHITECT.

The system on which the building work is carried out is interesting. The Development Company invited tenders from a number of firms, not at a rate per house, but on the basis of $150,000 worth of work. The firm engaged is paid according to a schedule of prices. By these means the soundness of the work is assured. Great care has been taken in the selection of the workmen, the ultimate staff of 300 to 400 men having been chosen after testing the ability of more than 1,000 in nine months' building on the estate. The houses with a few exceptions are not built to be rented, but to be purchased, either outright or by an initial payment of, say $1,000, and the balance by yearly instalments — this system being worked in conjunction with a reputable insurance company. The houses themselves vary from large to small, some of them costing $10,000 or $15,000, and others (quite cottages), costing only a few thousands of dollars. Brick is used throughout, either roughcast or left plain, and all roofs are covered with red tiles. As a whole the effect is good, and in an age when the ever-increasing growth of cities is a menace to domestic life it is well to turn to such a practical example as the Hampstead Garden Suburb affords. There can be no doubt that the housing problem will only be satisfactorily solved by schemes more or less of this character. Towns cannot be allowed to spread themselves mile after mile without check or hindrance. Hence come town planning bills and development proposals that aim at stemming the wholesale building over of estates on the fringe of urban centers — hence the search for a way out of the difficulty — and hence this excellent object lesson at Hampstead.

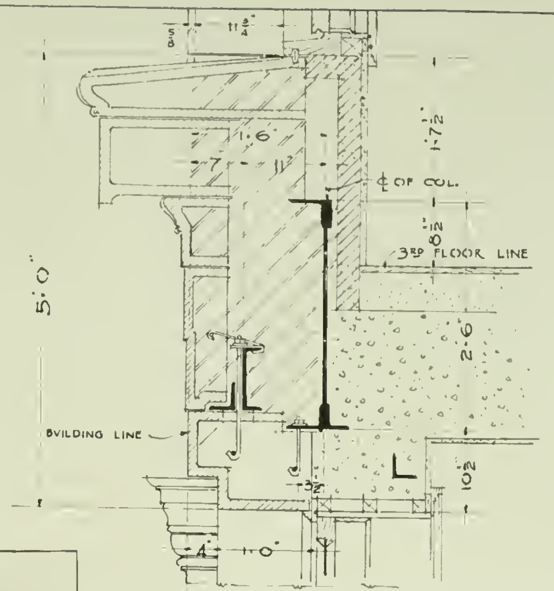
ENTRANCE.
HOUSE BY HERBERT A. WELCH, ARCHITECT.



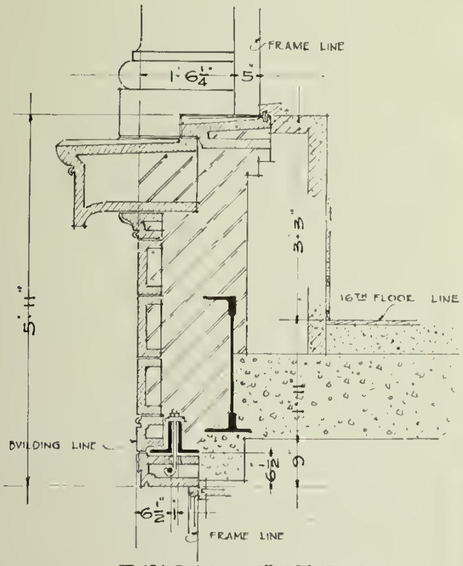
ENTRANCE.
INSTITUTE BY E. L. LUTYENS, ARCHITECT.



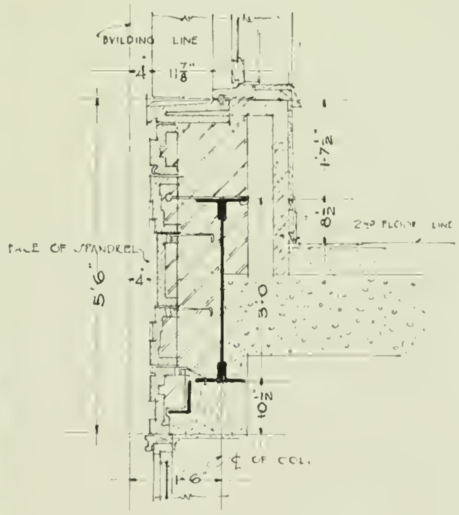
TYPICAL SECTION THRU MAIN CORNICE.



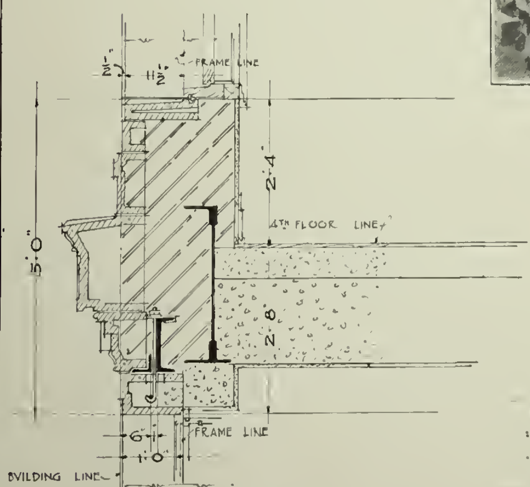
TYPICAL SPANDREL SECTION
3RD FLOOR



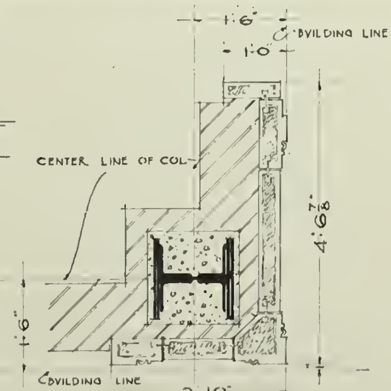
TYPICAL SECTION
16TH STORY BELT COURSE.



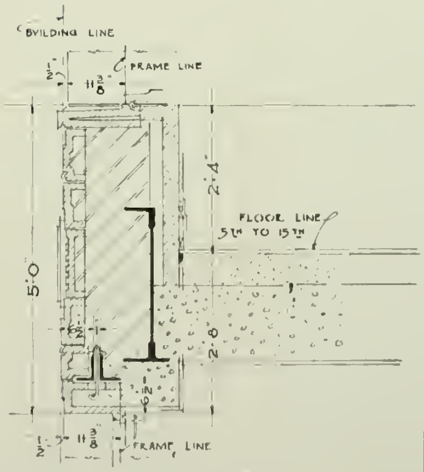
TYPICAL SPANDREL
2ND STORY



TYPICAL SECTION
4TH STORY BELT COURSE



PLAN OF CORNER PIER



TYPICAL SPANDREL
5TH TO 15TH FLOORS

FORD BUILDING, DETROIT, MICH., SHOWING DETAILS OF TERRA COTTA CONSTRUCTION.
D. H. Burnham & Co., Architects.

FORTY-THIRD ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

DURING the past decade the conventions of the American Institute of Architects have steadily advanced in interest, in vitality, and in constructive quality. From the beginnings nearly half a century ago the process has been one of emergence from a self-centered, intensive professionalism, into the wider vision of liberal inclusiveness. There has been a corresponding increase in self-respect, in appreciation of the mounting dignity and responsibility of the profession. The Forty-Third Convention was no exception to the rule; in many ways it reached the highest point yet touched in its sense of dignity, its statesmanlike and constructive legislation, its vital grasp of conditions, possibilities and duties; above all, in a certain fine spirit of comradeship, mutual interdependence and appreciation.

In the Address of President Gilbert, the Report of the Board of Directors, and those of the Standing and Special Committees this constructiveness was particularly apparent, while the legislation throughout was of the same high character. This committee work is fast becoming, as it should, one of the most important functions of the Institute; in the majority of cases the committees — which for the past few years have been peculiarly well chosen — have devoted themselves to their work with universal singleness of purpose, and with a broad vision that eventuates in stimulating and thoughtful reports that are well received — and too often placed on file, no more to be heard from. As was forcefully brought out in Washington, much of this work is purely gratuitous, many of the committees paying all their own expenses (which is bad economics, however good it may be as an evidence of generosity and unselfishness), and it demands a better fate than entombment in somewhat dilatory "Proceedings." Legislation without the "enacting clause" is inoperative, and it may be questioned if the Institute does not occasionally lay itself open to some criticism on these lines.

Of the work of the committees for the past year that on contracts and specifications is undoubtedly the most ambitious and weighty; the chairman, Mr. Atterbury, made no attempt to place the work before the convention, as its magnitude made this manifestly impossible, but two years of the hardest and most conscientious labor have brought their fruition and this will shortly be placed before the members of the Institute, the first logical and successful attempt at the standardizing of a most important but hitherto somewhat chaotic department of architectural practice. Those who are familiar with the achievement of the committee have perfect confidence that another great question referred to it by the last convention — the standardization, so far as possible, of the building law in the United States — will be handled in an equally competent manner, even though the difficulties in the way of a solution are ten times greater than those in the case of contracts and specifications.

Of equal importance, though in a widely different field, was the Report of the Committee on a Canon of Ethics. This report also represented the most arduous and incessant labors and the result was striking in its simplicity and convincing quality; evidently the aim of the committee had been to avoid niggling distinctions and irritating prohibitions, and instead to establish broad and sound principles covering only the most fundamental points, leaving the Chapters to work out such minor details as local conditions might make necessary. Cognate in its nature was the action recommended by the Board and heartily endorsed by the convention, whereby for the future it becomes unprofessional for a member to take part in a competition unless the terms have been approved either by a Chapter, or by the Institute itself. It will be remembered that this matter has been developing slowly, the last preceding action making such participation unprofessional only if a given set of conditions had been officially condemned by the Institute or one of its Chapters.

Significant also was the general disfavor expressed at the growing custom of Chapters to issue local schedules of charges different to that of the Institute even though not inconsistent therewith. This brought up the whole question of the relation between the Institute and its Chapters, a question of some delicacy and great importance, not altogether lacking also in elements of peril, and the result was that by vote of the convention the Board was formally instructed to canvass the whole matter and report its conclusions in the form of definite resolutions.

The raising of the dues was a foregone conclusion and was imperative if the finances of the Institute were to remain in a healthy condition; the action was indicative also of the growing sense of the dignity and importance of the organization, the old scale having been rather absurdly out of proportion to the actual benefits received, and far less than similar charges in other countries. If the evident desire of the convention is carried out by the Board, viz: that some rearrangement of the several classes of membership be made so that those now ineptly termed "Associates" shall become to all intents and purposes, and in name also, the regular and standard members, the rank of Fellow becoming but little more than a mark of signal honor accorded to a few, there will be little opposition to this last raising of the dues.

Nothing was said about last year's change in the schedule from five to six per cent for professional services, and it may be assumed that this most desirable reform has been adopted without difficulty and is now in a fair way to obtain full public recognition as the law of the profession.

Amongst the committee reports that on "Allied Arts" was by far the most sensational and provocative of thought. There seemed to be three categories of listeners: Those who denied Mr. Pond's premises, but accepted his conclusions; those who admitted his premises, but refused his conclusions; and those who were so appalled at the ruthless destruction of the obvious, the merciless annihilation of platitudes, that they lost all sense of the difference between conclusions and premises. Everyone admitted, however, that as criticism this notable paper was both brilliantly destructive and as brilliantly constructive, and it would be unfortunate were it to be buried in proceedings with no opportunity given for wider publicity.

The Report of the Committee on Education was as well thought out and stimulating as usual, this time the subject being the education of those who can afford neither the time nor the money for full courses in regular schools and are driven back on the more than doubtful offerings of the Y.M.C.A. classes and the correspondence schools. The committee urged that the Institute should offer its services in an advisory capacity to these educational free-lances ; that it should urge the colleges to take up "University Extension" amongst draftsmen and poor students; and that in some way the Architectural League of America should be brought into line, assimilated, and made the educational agency of the Institute. The action of the League convention, which was held at the same time as that of the Institute, seemed to play up to this last suggestion, as its attitude was friendly and approximating to a degree, but it is difficult to see how so important a matter as education could safely be handled by the League, or any subordinate, semi-independent body, unless it were wholly interpenetrated by the Institute itself and directly controlled thereby.

The ever-present question — the method of nominating officers — was well to the front as usual, and also, as usual, a new experiment is to be made. In spite of the fact that the successive systems of the past have, with but few exceptions, resulted in the nomination and election of absolutely satisfactory men, and, so far as the presidency at least is concerned, those who were desired by the majority of members, there has been much dissatisfaction, chiefly because one ticket only was named and the ordinary citizen feels aggrieved if he is offered no choice. Supplementary nominations from the floor are ungracious things at best, but it has usually been that or a merely formal ratification of the action of a nominating committee. At the convention of 1908 the matter was threshed out in detail; by an unanimous vote the sense of the convention was registered as in favor of a ticket with three names for each vacant office, and the nominating committee was told it should have at least one meeting instead of carrying on its work by correspondence. Both these wishes, formally registered by the delegates, were disregarded by the committee and once more a single ticket was presented. Its manifest excellence in every way prevented supplementary nominations, and it was overwhelmingly endorsed, but the general dissatisfaction was as evident as ever, and the Board was instructed to invent some new scheme (following more or less the lines of that recently put in force by the Boston Chapter), whereby Institute members may form groups of a given number and nominate directly for any office, a certain number of votes automatically placing a name in nomination without the intervention of a nominating committee.

Apart from the legitimate work of a convention there was something less of interest than in recent years. The McKim Memorial Exhibition was all it should be, but the topic chosen for special consideration — architecture in its relation to railroad interests — was not very inspiring, in spite of some excellent papers and one or two good speeches at the banquet. The presentation of the medal awarded to Mr. McKim by the Institute, before his death, was simple to a degree — and adequately impressive, Mr. Mead's words in acceptance wholly rising to the level of grave dignity the occasion demanded.

So far as the actual work of the convention was concerned it was, as we have said above, statesmanlike and constructive, and full of a fine sense of responsibility and community of interest. How far, however, is this going to have issue in practical form; how much of it is to be buried in proceedings; how much further ahead as a powerful and practical agency, as an organization that compels the respect of its members and of the public, is the convention of 1909 going to force the American Institute of Architects? The work of a convention is not done when it performs its legislative routine, the function of the Institute itself is not discharged when it has looked after the current interests of its members. It has sometimes seemed to us — and we speak in all deference — that the Institute fails in a measure to realize what a constant power in public affairs it should be, and may be; that it depends too much on accomplishing something during the three days of a convention and not enough on accomplishing still more during the three hundred and sixty-two remaining days in a given year. This is not to say that the Board of Directors is inefficient, for it is exactly the reverse; it is rather that the mechanism is somehow defective, that something is needed to keep the dynamic force of a great organization constantly pulsating, not only through its own veins, but as well out into the arteries of the great social entity of which it is a part.

It may seem ungracious to suggest this view of the case in the face of the remarkable developments in this line that have taken place during the last generation. Of late years, under one able president after another, and with the aid of singularly well chosen Boards of Directors, the Institute has been coming into its own with giant strides. Its work for the conservation of the L'Enfant plan of Washington and its constant and always successful fights against legislative ignorance; the influence it has exerted throughout America in the line of good city planning and improvements; its encouragement of education and the beneficent influence it has had on the schools; the dignified and even august appearance it has made at its Washington conventions through its exhibitions, memorial meetings, and its really stately banquets, where the most distinguished men in America have been its guests — all these things have proved a growing self-consciousness, and have resulted in a vastly increased respect and consideration throughout the country. There is no reason why another ten years should not see a doubled prestige, and this can easily be achieved if the conviction as to the manifest destiny of the Institute becomes implanted in its members, and if the mechanism is adapted to new necessities.

There is something about the architectural profession, or attaching to the particular quality of man that enters it, that makes the architect one of the most public-spirited, far-seeing, and vital of citizens. It is not too much to say that he is less selfish, less individually covetous, less materialistic than almost any other citizen of the Republic. The "man-in-the-street" grasps this idea with some lethargy and retains it with a relaxing hold. To him the Institute is a kind of trades union, its members either as shrewd as himself or as impractical and "no account" as the other fellow. This sentiment is reflected in Congress, in the governing boards of corporations, and in the näive assumptions of would-be clients in certain parts of the country. For some of this the Institute is indirectly responsible, in so far as it contents itself with its own internal affairs and fails to place itself constantly before the public, asserting its prerogatives and demanding that the rights of its members shall be respected. The Institute as representing the architectural profession is no longer in the position of a suppliant at the gates of Cesar or of Midas; in its personnel and its procedure it has no rival but the Royal Institute of British Architects, and in dignity and efficiency it is on a level with any professional organization in America. How far are these facts recognized in Congress, in state and municipal governments, or amongst private citizens fifty miles from the site of a Chapter? Any architect who has had work to do outside the large cities where there are Institute Chapters, or with the several civil governments and with many corporations as well, will give the answer, and this answer makes the question we are asking pertinent and vital.

What can the Institute do, now that it has so nearly perfected its internal affairs, to make itself known, respected, and yes, feared, if need be, throughout the length and breadth of the nation? Two suggestions offer themselves, and we present them for what they are worth. First, it might hold its regular legislative convention annually in Washington, on the lines of the best precedents of the last few years, with all that means of exhibitions, official banquets, distinguished guests, medal presentations, etc , and in addition it might have an intermediate convention in the spring or early autumn, chiefly cultural in its nature, and held in rotation in each of the great cities throughout the whole country, from St. Paul to New Orleans, Richmond to Seattle. Second, while preserving intact its present secretarial system as an administrative arm, it might have a general secretary, well paid, giving all his time, and bound to travel widely throughout the country, bringing local Chapters and isolated practitioners more closely in touch with the national organization and representing it on every possible occasion, speaking whenever opportunity offered and acting as the general mouthpiece and representative of the whole profession — amongst "them that sit in darkness" as well as in the inner circles of the enlightened.

As for the first suggestion it may be said that the more distant Chapters deserve everything the Institute can do for them, by reason of the admirable devotion they have shown for years, at great expense of time and money. No action of the late convention will receive more general approval than the vote that it was the sense of the meeting that the convention of 1910 should be held on the Pacific Coast. This is not enough, however. A convention in a generation is scant fare, yet how, as things now stand, can it be more? Public policy demands that most of the conventions should be held in Washington, and if one in three were excepted, and each Chapter were treated on an equal basis, it would be half a century before the turn of a given Chapter came around again. Suppose, however, that every year a second convention, without legislative powers, but free to frame legislation to be presented at the next general convention, devoted largely to exhibitions of contemporary work, papers on cultural and practical subjects, and to social intercourse, were held in the different Chapter cities, the Institute officers being present, with one or two delegates from the more distant Chapters. Would not such an event do much towards keeping these local organizations in touch with the national body, preserving their interest in its affairs, and rendering each, and the profession itself, far more powerful, since far better known, in the many cities where now the honor of the profession is discounted, the name of the Institute an impotent shibboleth at the hands of a saving remnant? Such conventions would be valuable, not only in that they would do a scant measure of justice to the Chapters that lie far afield, while serving to keep alive from year to year the impulse of general conventions, but because they would offer an opportunity for just the sort of thing that is little by little being crowded out by the increasing business of a growing organization — essays, papers, and discussions devoted to the esthetic, historical, and practical sides of architecture. Convention is now chiefly a parliament and a dinner, and under the circumstances it cannot possibly be more; but important as are these elements they are not alone, there are others of equal value that now we are tending to forget.

Our second suggestion — that of a general secretary — is less easily put into words, and admittedly less susceptible of immediate accomplishment. Nevertheless such an official would do more, in our opinion, than any other agency towards making the Institute constantly and potently operative. The president generally is, and always should be, one of the most eminent in the profession, and such an one cannot give either the time or the thought to the constant activities of such an office. The secretary has all he can do to handle the clerical work of the Institute; moreover, different types of men are a prerequisite for the different positions. If the work is to be done it must be at the hands of a new official — an architect of high reputation, a diplomat, a good and convincing speaker — above all enthusiastic, and constructive in his type of mind. To command the services of such a man a large salary would be imperative, for he would have to give practically all his time, and this fact alone may put the proposition out of the category of practical politics. We are concerned, however, only with the principle. If it were adopted the question of ways and means would be a subject for a totally different inquiry.

Such a general secretary as we propose would be in a way the viceroy of the sovereign Institute; he would keep in touch with all the Chapters, visiting each every year, conveying to them the impulse of the president and Board, taking back to the latter what he had gathered in his wide visitations. He would follow up the reports of the committees to see that they did not find their fruition only in judicious and eloquent words. He would have immediate charge of the publication of the proceedings and other Institute matter; he would watch legislation so far as possible and bring any dangerous action that might be threatened to the immediate attention of the Board; he would accept every opportunity offered for representing the Institute at conventions, meetings, and dinners of other creative bodies; he would cultivate the best relations with those who may help to make or mar the fortunes of the profession — in fact, he would be the Institute in action between convention and convention and between one Board meeting and another.

The right man, loyally and enthusiastically directed and supported by the president and Board, would in two years double the membership of the Institute and place it in the position of dignity and respect it is now slowly acquiring, and which belongs to it by every possible right, but that, under present conditions, it can hardly achieve in its completeness within a generation.

Plate Illustrations— Description.

State Normal College, Albany, N. Y. Plates 1, 2, and 3. The college consists of four buildings, viz: College, Science, Auditorium, and a Power House. The three main buildings are connected by peristyles. The boiler house is located at the rear and is connected to the Science Building by an underground conduit. Upon the exterior of all the buildings are used the medium shades of red "Tapestry" brick, while the columns and steps are of limestone and the window sills and cornices of white terra cotta. All brickwork was laid with stretchers tied to backing with metal ties. Rough sawed flush joints were used, about five-eighths of an inch thick and of pearl gray color. The staircases are constructed with steel strings and risers and slate treads. The interior finish throughout is of white oak with stained and waxed finish; the floors are of oak, except in basements where granolithic finish, and in toilet and bathrooms where white vitreous tile floors were laid; and the walls and ceilings are plastered.

The heating system consists of steam forced through a conduit line to the basement subways, in which are placed stacks for indirect heating. Direct radiation is installed to supplement the indirect system. High pressure steam is supplied to the various points where needed for testing purposes, etc. Returns are all brought back under atmospheric pressure. The indirect heating system is proportioned to heat sufficient air for ventilation purposes from zero to 70°. A system of air circulation by natural draft is depended on, with flues made proportionately large to accomplish this result. The direct service takes care of the heat loss through the walls and windows of the buildings when the outside air is at zero.

The buildings are arranged for 800 pupils and are two stories high, except the central portion of the College Building, which is three stories high. The auditorium seats 800 people and is provided with a stage and necessary dressing rooms and toilet facilities. The gymnasium is located under the auditorium. The basement of the College Building contains lockers, toilet and bathrooms for each sex. The first story provides for administrative offices and class rooms; the central portion of second story contains the library, which is equipped with steel stacks and tables; while the remainder of the second story and the entire third story of College Building are given over to class rooms. The first and second stories of the Science Building contain laboratories for physics, physiography, chemistry, and biology, with lecture rooms, private laboratories, and apparatus rooms in connection with each laboratory. In the basement of the Science Building are located manual training shops and quarters for domestic science work, also locker and toilet rooms. The cubical contents of the four buildings is 1,924,000 cubic feet. The method for figuring the cubical contents is by taking the entire area of the group within the outside face of walls and multiplying by the height from the top of the basement floor level to a point half way up the slope of the roof, then adding the cubical contents of the pipe conduits under the basement floor. The entire cost of the building, exclusive of furnishings and equipment, was about $360,000, which is approximately 18½ cents per cubic foot. The cost of equipment was $35,000, in addition to which about $10,000 was expended for grading, sidewalks, and driveways.

House at Brooklyn, N. Y. Plates 5 and 6. This house is an adaptation of the Georgian architecture of the time of Sir Christopher Wren to the requirements of modern city life, i. e., the style is that in vogue in England at the same period which produced the Colonial architecture in America.

The material of the exterior is a purple brick set in a bond of two stretchers to one header, which gives a suggestion of a diaper pattern to the general texture of the brickwork. This texture is most clearly seen in the illustration of the entrance door. The trimmings of white glazed sand blasted terra cotta take the place of the wooden trimmings customarily seen in the Colonial work.

The interior is designed with extreme simplicity, the greater portion of the trim being painted wood of light cream color or delicate grays and greens.

This residence possesses two features of special interest. The first of these is a large children's play room, 40 feet long, extending through the entire depth of the house. This play room is provided with large closets and also with special overhead beams from which gymnastic apparatus can be suspended. The room is placed on the top story of the house with windows on three sides, so that it receives the sunlight during the entire day, and owing to its location the children can make as much noise as they please without disturbing the remainder of the household. The other feature is a special fireproof staircase running through the entire house and provided on the level of the first floor with an exterior door connecting directly with the outside porch. This staircase, which is separated by fireproof doors from the remainder of the house, furnishes a convenient means of exit in case of trouble and at the same time obviates the unsightly feature of an exterior fire escape.

There is a cement walk extending around the outside of the garden specially adapted to roller skating and sufficiently large to permit of the use of bicycles. Outside of this path are the flower beds. A small fountain and pool at the further end of the garden forms an attractive point of view as seen from the garden front of the house.

House at Riverside, Ill. Plate 10. This house is designed cornerwise on the lot, to permit of a sunken garden directly in front, with an approach on either side. The color scheme of the garden is planned to harmonize with the warm brown of the brick and the buff of the stone. The frieze on the exterior is of plaster finished in a very light shade of brown. Upon the interior the entire woodwork in the main hall and dining room is treated with a silver gray tone on quarter-sawed oak, which was obtained by using a light bluish gray stain and a flake-like filler, finished with shellac, and waxed. The panels of silk tapestry and white border are framed with a wide dark mahogany strip. The dining room and den are in weathered oak, with walls of cream colored burlap and beamed ceilings having the panels of rough plaster and stained. The basement contains laundry, boiler rooms, and billiard room, while the third floor provides for the servants' quarters. The house cost $20,000, making the cost per cubic foot 28 cents.

William R. Plunkett School, Pittsfield, Mass. Plate 4. The exterior is of water struck brick and Indiana limestone. The cornice, pattern work, and projecting courses are of common brick. The main walls upon the interior are built of brick, while the closets and other minor partitions are of terra cotta. The plaster is applied directly to the masonry. Iron staircases are used throughout, while the floors in the corridors and class rooms are of maple. The roofing consists of asphalt and gravel. The gravity system of ventilating has been employed in connection with steam heat. The entire cost of the building was $81,147, and the cost per cubic foot 14.3 cents.

House Near Leicester. Plates 12 and 13. This house is an example of modern domestic architecture in England. The general grouping follows strictly the lines of the plan, and the use of bricks, variegated in tone, relieves the exterior treatment of any appearance of monotony; while the sturdy treatment of the chimneys gives added character to the house.

Tap Room, Hotel Belvedere, Baltimore, Md. Plate 11. This room, which is about 50 feet long, 30 feet wide, and 18 feet high, is lined from floor to ceiling on all four sides with "Tapestry" brickwork and tile. The dado consists of plain brick laid up in Dutch cross-bond to a height of 8 feet 6 inches, finishing with a narrow belt course, which consists of two lines of blue brick separated by a pony brick 1 inch in thickness, and little spots of stucco. Above the belt course are panels of mosaic brickwork executed in deep rich red, golden brown, and blue. The openings are outlined with bands of brownish gray with spots of blue, and over the openings are a number of panels worked out in varied designs, the prevailing colors of which are brownish red with outlines in gray dotted with blue. The frieze consists essentially of two members, the lower of which is formed by two lines of clear red headers with brown, red, purple, olive, and blue bricks laid at an angle of 45°, while the upper member is outlined with a gray border and embraces an interesting band of herringbone construction, the members of which are separated by pony brick 1 inch in thickness. The mortar joint, ½ inch in width, is rough cut flush throughout, thereby giving it a texture to correspond to the surface of the brick, and is of a gray color with a slight yellowish tinge.

Two Houses in Schenley Park, Pittsburg, Pa. Plates 7 and 8. The exterior brickwork, which is laid up in English cross-bond, presents a surface with considerable texture throughout. The plaster work is cream-white and the half timber work is stained a rich nut-brown. The porch ceilings and eaves are also plastered. The roofs are covered with a dark red tile with broken joints. The interiors of these houses are practically finished throughout in hard wood with the walls on the first floor paneled. The third floors are fitted up for servants' quarters.

House at Staten Island, N. Y. Plate 9. This house is built with a rich red brick for the stretchers and a very dark brick for the headers, laid up in Flemish bond, with white mortar jointing. The exterior woodwork is of white pine. The entire cost of the house was $10,000, and approximately 22 cents per cubic foot.

Editorial Comment and Miscellany.

FROM the sixty-two designs submitted for the great water gate and Fulton memorial which is to be erected on Riverside Drive between 114th and 116th streets, New York City, at an approximate cost of $2,500,000, the jury of award of the Robert Fulton Monument Association have announced the names of the ten successful competitors in the preliminary competition.

The jury of award consisted of two architects, Thomas Hastings and George B. Post; two laymen, Robert Fulton Cutting and Isaac Guggenheim, and Lansing C. Holden as advisory architect.

Each successful contestant received a prize of $500 and, in further competition, additional prizes will be awarded to the first four among the ten already announced, bringing the total in prizes to $3,000 for first place, $2,000 for second, $1,500 for third, and $1,000 for fourth place. These selections will be announced on March 15th, and the name of the winner will be given out on April 1st.

FOUNTAIN IN GARDEN OF HOUSE AT SEATTLE, WASHINGTON.
Executed in "Verde Antique" matt glazed faience, by the Hartford Faience Company.
Graham & Myers, Architects.

The successful contestants were Charles P. Huntington, Mills & Greenleaf, Lawrence F. Peck, J. H. Freedlander, Bosworth & Holden, and Harold Van Buren Magonigle of New York City; Robert P. Bellows of Boston, Albert Kelsey and Paul C. Cret, and Heacock & Hokanson of Philadelphia, and Herbert Scott Olin of Watertown, N. Y.

The water gate is not only to be a memorial, but is to provide the city a dignified landing place where, on spectacular occasions, officers of the United States or of foreign navies may be received.

EARLY in the year another section of the dormitory group at Princeton will be started. With funds raised by the alumni, three new "entries," with accommodations for forty-five students, will be provided and an extension thus obtained of the large group donated by Mrs. Russell Sage. Frank Miles Day & Brother, it will be remembered, are the architects of the entire group. . . . Haverford College is to have a new science hall, consisting of three departments devoted to chemistry, physics, and engineering. Work will probably be started next spring. . . . What is promised to be the most impressive building on the campus of the College for Women at Western Reserve University will be the gift of Samuel Mather, of Cleveland, and his children. The building will be used for recitations and class lectures. . . . A new building is likely to be added to the Columbia College Group in consequence of the George Crocker bequest of $1,500,000 for cancer research.

INTERIOR OF CHAPEL OF THE REDEMPTIONEST FATHERS, ESOPUS, N. Y.

The interior walls are faced with buff glazed terra cotta richly ornamented with Gothic tracery; the design of the tracery and other ornaments being accentuated in many places by the judicious use of color. The work was executed by the Atlantic Terra Cotta Company.
F. J. Untersee, Architect.

IN GENERAL.

At a recent meeting of the Architects' Association of Indianapolis, the committee having in charge the preliminary work of organizing a State Chapter of the American Institute of Architects made a favorable report on the progress of the work. A large number of members of the profession from all parts of the state have signified their intention of joining the larger body and there will be within a short time a meeting in Indianapolis for a final and permanent organization. The meeting of the local chapter closed with the election of officers as follows: President, Arthur Bohn; vice-president, Oscar D. Bohlen; secretary and treasurer, Henry H. Dupont.

DETAIL BY J. WALTER STEVENS, ARCHITECT.
The Winkle Terra Cotta Company, Makers.

At the annual meeting of the Washington Chapter A.I.A. the following officers were elected to serve for the year 1910: President, J. Rush Marshall; vice-president, Leon E. Dessez; secretary, Louis A. Simon; treasurer, Clarence L. Harding.

Joseph S. Cote, formerly of Somervell & Cote, architects, Seattle, Washington, has opened offices in the Henry Building. Manufacturers' samples and catalogues desired.

C. Grant La Farge, surviving partner of the firm of Heins & La Farge, has formed a new copartnership with Benjamin Wistar Morris, under the firm name of La Farge & Morris. Associated with the firm will be Arthur C. Jackson and Duncan Candler. Offices, 25 Madison Square, North, New York City.

Ernest M. Hartford and Silas Jacobson, formerly connected with the office of Clarence H. Johnston, have formed a copartnership for the practice of architecture under the firm name of Hartford & Jacobson. Offices, 520 Manhattan Building, St. Paul. Manufacturers' catalogues desired.

A. Warren Gould, architect, has entered into a copartnership with E. Frere Champney, under the firm name of Gould & Champney. Offices, American Bank Building, Seattle, Washington.

William R. Smith, architect, has opened an office at San Saba, Texas. Manufacturers' catalogues and samples desired.

DETAIL BY TOLEDANO & WOGAN, ARCHITECTS.
Executed by the Northwestern Terra Cotta Company.

Frederick G. Mueller, architect, of Hamilton, Ohio, has opened a branch office in Middletown, Ohio. Manufacturers' catalogues desired.

Frederick C. Browne and Randolph H. Almiroty, architects, have formed a copartnership with offices at 3 West 29th street, New York City.

Those who are interested in waterproof brick stains would do well to send for a copy of a little booklet which has just been issued by Samuel Cabot, Boston. The cover design is particularly unique and attractive, and the story of waterproof stains is briefly but well told. Questions which have repeatedly been asked us are clearly answered in this little booklet.

"Tapestry" brick manufactured by Fiske & Co. were used in the Normal School Group at Albany, illustrated in the Plate Forms of this issue.

The architectural terra cotta for the residence of Julius Liebmann, Esq., Herts & Tallant, architects, illustrated in the Plate Forms of this issue, was executed by the Atlantic Terra Cotta Company.

DETAIL BY SCHWARTZ & GROSS, ARCHITECTS.
The New York Architectural Terra Cotta Company, Makers.

"Tapestry" brick manufactured by Fiske & Co. were used in the exterior walls of the house for Julius Liebmann, Esq., Brooklyn, Herts & Tallant, architects, illustrated in the Plate Forms of this issue.

The brick used for the house at St. George, Staten Island, N. Y., by Harry S. Waterbury, architect, illustrated in this issue, was furnished by the Sayre & Fisher Co.

STORE BUILDING, INDIANAPOLIS.
All terra cotta front executed by Indianapolis Terra Cotta Company.
D. A. Bohlen & Son, Architects.

The bricks that were used in the Tap Room of the Hotel Belvedere, Baltimore, illustrated in the Plate Forms of this issue, were Fiske "Tapestries."

The architectural terra cotta used in the Ford Building at Detroit, illustrated on page 13 of this number, was executed by the Northwestern Terra Cotta Company.

Stebbins & Watkins, architects, formerly at No. 42 Chauncy street, Boston, Mass., are now located in their new offices at No. 164 Federal street.

Theodore C. Link, architect, announces a copartnership with his son Karl E. Link under the firm name of Theo. C. Link & Son. Their address is Suite 1000-1001 Carleton Building, St. Louis.

DETAIL BY SOMMERFELD & STECKLER, ARCHITECTS.
The New Jersey Terra Cotta Company, Makers.

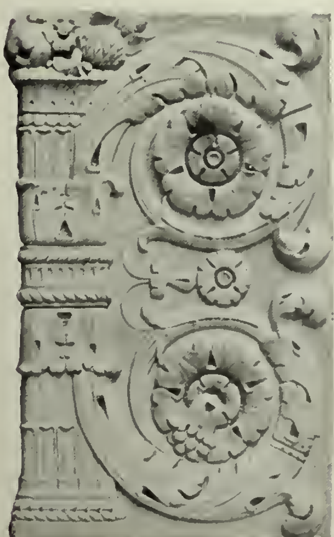
SCHOOLHOUSE AT NEW ORLEANS, LA.
Built of buff brick manufactured by the Hydraulic-Press Brick Company, of St. Louis.
E. A. Christie, Architect.

The Five Points House of Industry, which for sixty years cared for children of the poor in its buildings on Worth street, New York City, has purchased a large tract of land on the White Plains Road, adjoining the grounds of the Knollwood Country Club in Westchester County. Here it will build a new home in which to continue the work abandoned last summer when the Worth street buildings were taken over by the Children's Aid Society for public school purposes.

CITY STABLES, BELLE ISLE, DETROIT, MICH.
Roofed with German fire-flashed tile, made by Ludowici-Celadon Company.
Mason & Rice, Architects.

Plans have been filed for a twenty-story commercial building, to be erected on the site of the old Ashland House at Fourth avenue and 24th street, New York City. It will front 98.9 feet on the avenue and 150 on the street, and will cost $960,000.

Construction of a new "Castle Gould" at Port Washington, L.I., is soon to be started, under Hunt & Hunt, architects. It will be



DETAIL BY CROW, LEWIS & WICKENHOEFER, ARCHITECTS.
Executed by the Conkling-Armstrong Terra Cotta Company.

DETAIL FOR A CHURCH BY F. A. DE MEURON, ARCHITECT.
The South Amboy Terra Cotta Company, Makers.

DETAIL BY LONG, LAMOREAUX & LONG, ARCHITECTS.
American Terra Cotta & Ceramic Company, Makers.

TELEPHONE BUILDING, MILWAUKEE.
Faced with wire cut dark red brick, made by Western Brick Company.
A. C. Eschweiler, Architect.

228 feet by 110 feet, and when completed, with garage, stables, etc., will cost nearly $1,000,000.

Plans have been filed for a new twelve-story office building, with a three-story theater annex, to be built on the Fitzgerald plot, southeast corner Broadway and 43d street, New York City. The structure will cost about $900,000.

A CORRECTION.

On page 256 of The Brickbuilder for December, in connection with the article treating of "Composite Hollow Tile," in the table giving weights and costs, the weights column is footed wrong. It should be one hundred pounds instead of ninety, and the paragraph which follows should read:

It will be seen that the depth required in both cases was the same, viz.: 15 inches; that the dead weight was in both cases identical, thereby making it possible to use the same amount of steel in girders and columns for either construction, etc.

McKIM NUMBER — THE REGULAR EDITION OF "THE BRICKBUILDER" FOR FEBRUARY WILL BE ENLARGED AND DEVOTED ENTIRELY TO THE PRESENTATION OF THE MORE IMPORTANT WORK OF CHARLES F. McKIM. THE PRICE OF THIS NUMBER — TO THOSE WHO ARE NOT SUBSCRIBERS OF "THE BRICKBUILDER" — WILL BE ONE DOLLAR. AS THE EDITION WILL BE LIMITED THOSE WISHING THIS NUMBER SHOULD PLACE THEIR ORDERS AT ONCE.

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AN ARCHITECTVRAL MONTHLY

FEB.

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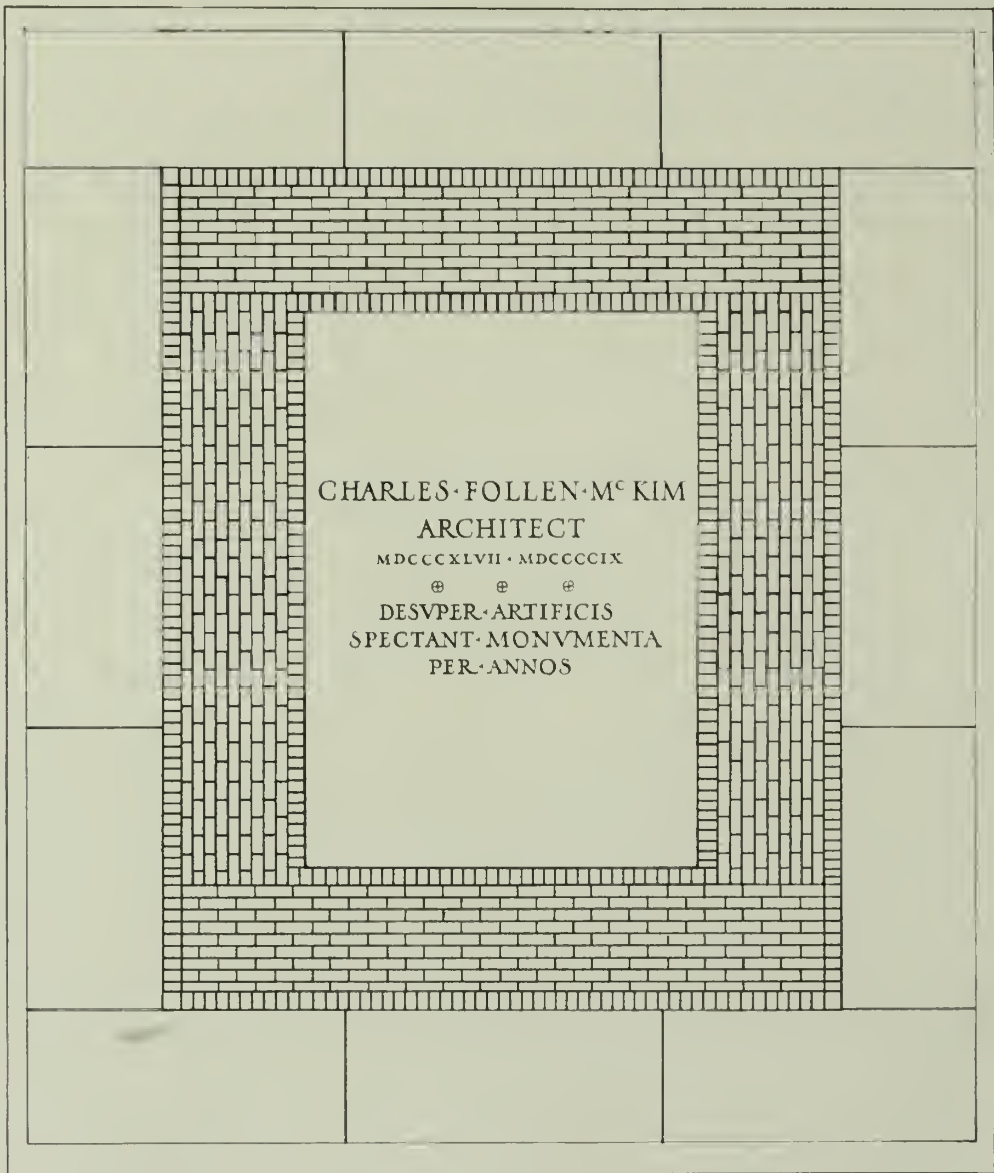
Advertisements will be printed on cover pages only.

THIS NUMBER PRESENTS SOME OF THE MORE IMPORTANT WORK WHICH HAS BEEN DONE BY McKIM, MEAD & WHITE AND WITH WHICH MR. McKIM WAS PARTICULARLY IDENTIFIED.



DESIGN FOR TABLET
TO BE PLACED IN
PAVEMENT OF TERRACE,
COLUMBIA UNIVERSITY.

CHARLES FOLLEN McKIM

THE BRICKBUILDER

VOL. XIX. NO. 2. FEBRUARY, 1910.

Some Critical Reflections on the Architectural Genius of Charles F. McKim.

BY ROYAL CORTISSOZ.

THE discussion of the work of Charles F. McKim in the pages of this magazine is a peculiarly sympathetic task. "The Brickbuilder," being dedicated to a specific material of architectural art, provides an atmosphere exactly adjusted to the whole character and achievement of this distinguished American. He was never one of those designers content to rest satisfied with work of the sort that merely "looks well on paper." Building materials were to him what pigments are to the painter; he handled them with the same intensely personal feeling for their essential qualities that a great technician of the brush brings to the manipulation of his colors, and he left upon his productions the same autographic stamp. Let me say at the outset, and let it be clearly understood throughout these remarks, that this point involves no invidious detachment of his individuality from the partnership in which he labored for more than thirty years. If ever there was a homogeneous firm in the history of the architectural profession it was that of McKim, Mead, and White, and in unnumbered instances it is next to impossible to say where the inspiration of one of these three collaborators left off and that of either or both of the others began. Their "team work" has ever been a thing to delight in by itself. I shall not attempt to pigeon hole their different contributions to the long list of buildings by which they are all known. But if, in a survey of that work, we disengage certain artistic traits, we may be sure that they illustrate Mr. McKim's genius no less as a personality than as a member of the trio.

This is emphatically the case where the question of materials is to be considered. Stanford White had no keener passion for the effectiveness, as decoration, of a rich Flemish tapestry or a carved and gilded old Spanish column, than McKim had for the pure structural character of a well laid course of stone. I recall an incident sharply typical of his solicitude for the significance of material, for the effect of an idea embodied in the disposition of just so much substance. It was at the time of the building of the Boston Public Library. Certain sheets of marble were to be put in the entrance hall — Numidian, I think they were — and their dimensions were determined by McKim with the utmost care. He regarded those dimensions as essential to the ensemble but when the marble was delivered it was found that they had not been rigidly followed. Forthwith the sheets were rejected. The contractor argued at tremendous length and almost wept, but McKim was harder than the Numidian itself. He was dealing in marble, I repeat, as an artist deals in paint and he would no more submit to a change in the appearance of the surfaces he had planned than a painter would allow his color-man to dictate the final condition of his picture. I make much of this episode because it stands for temperament, for an inborn gift. You cannot learn fastidiousness like that. The right dimensions of a piece of material for a given position in a building can no more be thought out and communicated by a pedagogue than the secrets of color and texture, to be similarly applied, can be formulated in the schools. To think of McKim is to think of a genius expressing itself through the stuff of architecture as creative genius expresses itself in all the other arts, somehow identifying itself with the very grain and fibre of that in which it works.

The instinctive character of McKim's gift comes out in the very earliest pages of his biography. When, as a lad of nineteen, he began his professional studies at Harvard, in 1866, the drift of his artistic nature would appear to have been fixed. It was in the strict sense a constructive gift. They say that he could draw even then with uncommon facility, but I have never heard of his having passed through that sketch-book stage in which a young architect is betrayed into fearful and wonderful performances by the ease with which he can use his pencil in Europe and bring back scores of supposedly adaptable "motives." Later in life, when he came to give much thought to the training of his juniors, he was wont to enforce upon them the excellence of the Ecole des Beaux Arts as a source of instruction, and to warn them against its dangers as a source of patterns. He had been there himself and knew what he was talking about. Leaving Harvard for Paris he entered the Ecole and stayed three years, but if its lessons had imposed any pedantic rules upon him his subsequent travels in Europe and his innate tendencies amply protected him from returning to America with a cut and dried hypothesis for the solution of his problems. He worked for a time under the late H. H. Richardson, and I know no better

ORIGINAL HARVARD GATEWAY,
CAMBRIDGE, MASS.

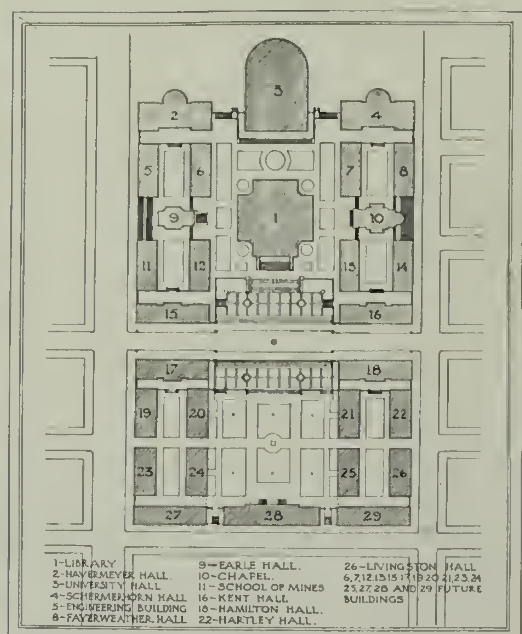
testimony to his artistic poise than you may find in his emergence unscathed from the powerful influence of that brilliant man. It is interesting, by the way — if we may take a little look ahead — to compare the Higginson and Whittier houses built side by side in Beacon Street, years ago, respectively by Richardson and McKim's firm, the latter then in its first "period." The two designs were produced in the most amicable rivalry. It was intended that they should harmonize. Unquestionably they go well together. Obviously, too, both are the work of artists. Let us not look for elements of superiority in either the one or the other. But in looking for the points of difference, and this is surely legitimate, may we not note that the Whittier design is much lighter in hand than its neighbor, that the makers of it were willing to leave a certain weightiness to Richardson, preferring grace, elegance, and a kind of delicate linear charm? All that was very characteristic of McKim.

Sometimes it has seemed surprising to me that McKim was not, at least in his formative years, brought more under subjection to Richardson, who was a big man and had a big way with him in his work. Yet, on a moment's reflection, one always remembers the importance of sheer taste in the history of the three partners and how much this matter meant to McKim. Naturally he swerved aside from the broad and luxuriant path along which Richardson moved at such a generous gait. If we imagine a Whistler sojourning for a little while, interestedly enough, in the atelier of a Rubens, but presently going forth to develop, as a matter of course, a totally different style of his own, we can form a fair working idea of what McKim did when he and White and Mead set about making their mark. To say that they began to make it with a kind of cleverness would be to understate the case, and at the same time there is something justly descriptive in the phrase. Certainly there is no occasion for critical solemnities on the buildings through which they felt their way toward a style of their own. I am

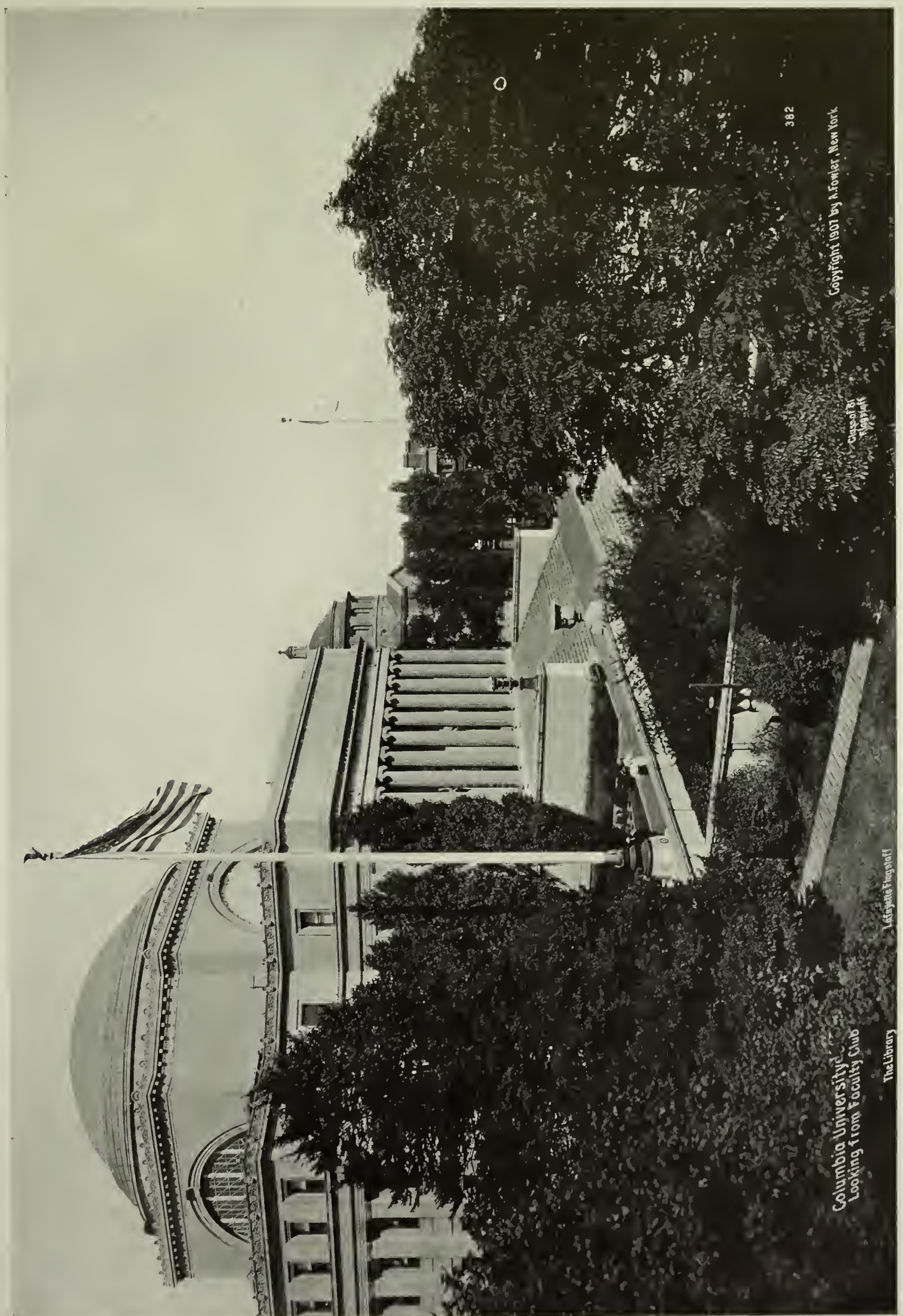
WALKER ART GALLERY,
BRUNSWICK, ME.

MAIN READING ROOM OF LIBRARY.

LIBRARY
AT
COLUMBIA UNIVERSITY,
NEW YORK CITY.

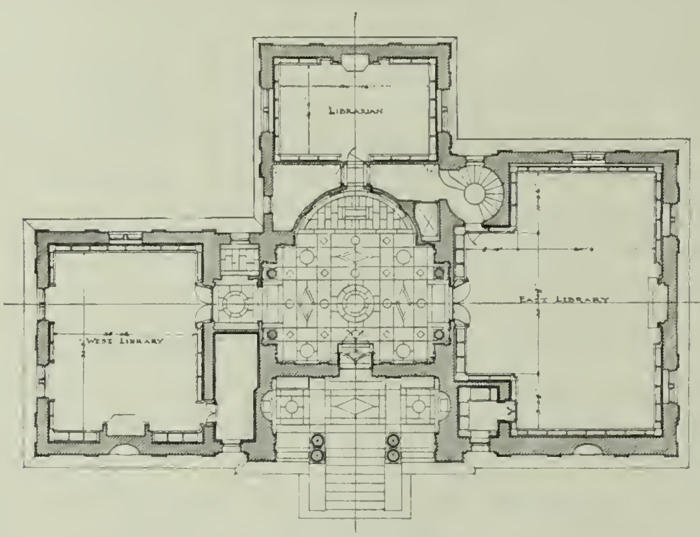


BLOCK PLAN OF COLUMBIA UNIVERSITY.



LIBRARY AT COLUMBIA UNIVERSITY.

thinking especially of things like the Casino at Newport and divers cottages that they built there in the '80-s. I am thinking, too, of the little music hall at Short Hills in New Jersey which I used to see at the end of a long walk every Sunday one summer. There was positive refreshment in coming upon that modest bit of country architecture, it was so original, so picturesque, and, withal, so perfectly adapted to its site. You saw at once that here was a new conception of what needed to be done with an old problem, a new art in place of an old sort of journeyman's craft. The novelty sprang, of course, from the brains of McKim and his colleagues, but it is, perhaps, worth while to note here another quarter whence the new movement got part of its impetus.

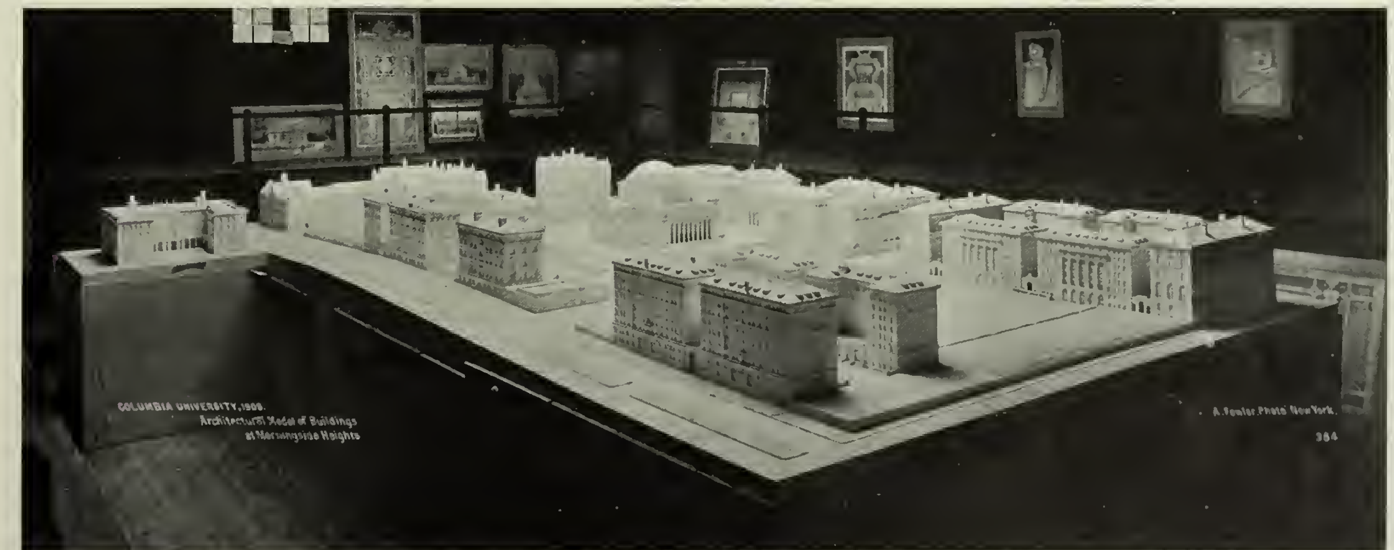


LIBRARY FOR J P MORGAN ESQ.

Very little if anything has been said about the social developments which synchronised with the early progress of this firm. It is in no uncomplimentary sense that they may be described as the fashionable architects of their time. On the contrary, the designation is to be employed in all seriousness and honor. It was their good fortune to come upon the scene just at a time when people of wealth were taking a new interest in the beautification of their environment. Private collections of pictures and other works of art were not only increasing in number, but were being formed with reference to higher critical standards. In the furnishing of houses a more lavish expenditure was accompanied by a desire for a better scheme of decoration. Modes of social entertainment grew richer and more complicated as they grew more costly. It is flattering to our self-esteem to believe that we were always at home in palaces, but, as a matter of fact, the splendors of American social life date from the last quarter of a century, an educational period if ever there was one. At Newport and elsewhere a type of dwelling was in demand such as had not got itself created since long before the war. Moreover, prior to the sixties, North or South, the owner of a prosperous house let himself go chiefly in respect to scale, and while his taste at the best aimed in the safe direction of simplicity he gave little thought to art as art. McKim's clients were quite willing that he should think of nothing else. There, I venture to say, you have the secret of his opportunity and one key to what he made of it. Men of means wanted new houses and were as keen on having these made beautiful and distinguished as though they were acquiring the paintings and sculptures of foreign masters. The Queen Anne cottage was doomed, as was the three-story-and-basement brown-stone "mansion" of our cities. The Casino at Newport is possibly the most representative of the country buildings erected by McKim, Mead, and White at this period. It is representative alike in its fitness for the purpose to which it was assigned and in what I can only describe as its restrained picturesqueness. In breaking with a tradition of dullness the firm did not consider it necessary to turn violent or bizarre. Nothing could be fresher, more unconventional, than this Casino, or the house for Robert Goelet at Newport, or the Osborne house at Mamaroneck, but then, on the other hand, nothing could be more judiciously studied, more refined, more delicately expressive of a luxurious but beautiful ideal. What McKim did in the country he did in the city, in such houses as the one for Mr. Whittier, which I have already cited, or those for Mr. Drayton, Mr. Cutting, and Mr. Phoenix in New York. He succeeded in the difficult task of blending dignity and repose with a certain piquancy. A design framed by him and his partners was always a serious work of art, and it was always amusing, to use the word with the implications it carries in French criticism. Decidedly McKim, Mead, and White were the architects for an expanding social era, as were those masters who built the city palaces and country villas of the rich Romans and Florentines of the Renaissance.

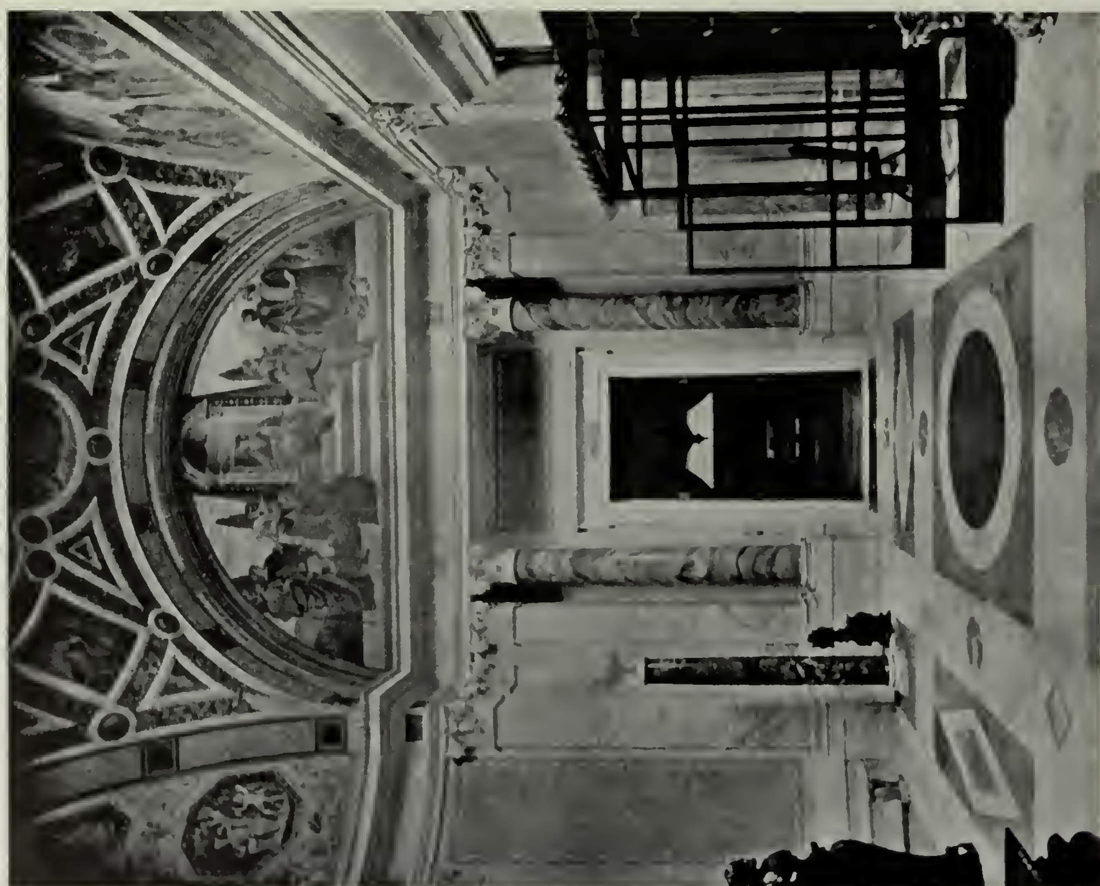
If they had stopped there they would still be gratefully remembered, but they were bound to press further and win a wider fame, bound both by the conditions of American life and by the nature of their resources. Everything conspired to lead them on from architecture that was charming to architecture that was monumental, and, on occasion, in the grand style. Here, I think, is where we cannot but recognize the steadily ripening influence of McKim. The genius that was so easily and so happily exercised upon the problems of dwelling-houses in city and country inevitably craved a larger outlet. The firm has for years gone on designing private houses, but it is significant that most of these have latterly been very stately affairs, on an imposing scale. The essential history of McKim is to be traced in a long succession of heroic buildings, starting with the Villard block in New York and the Public Library in Boston, and coming down to the Pennsylvania Station in New York. In the contemplation of these edifices we abandon all thought of those "amusing" qualities to which I have alluded, and think of graver things; but before touching upon the purely monumental aspects of McKim's work I must glance again, in passing, at that *flair* of his for materials and at a friendly, intimate quality which he carried from his earlier experience on into larger fields. As he attacked more ambitious themes he did not lose touch with the sentiment of the life around him, sacrificing personal feeling to scholarship. To see how tactfully, how sympathetically he could deal with subjects apart from ordinary private life and yet untouched by the heavy hand that governs the purposes of the average public building one has but to look at such things as the Harvard Club in New York, the Harvard Gates at Cambridge, the big building for the University of Virginia at Charlottesville, the Women's Building for the University of Illinois at Urbana, the buildings for the Army War College at Washington, and the railway station at Waterbury. In the first place the work done in these designs shows invariably with what judgment and taste McKim could use brick, when he chose, a material for which the firm long ago declared its effective appreciation. (The vast chateau-like house, built for Mr. C. L. Tiffany in New York, when the firm was coming into repute, is alone impressive evidence of a truly artistic faculty for the treatment of this material.) Furthermore, the buildings I have named and the gates at Cambridge are remarkable for their possession of a dignity that is not too austere. You are impressed but you are not overpowered. Something gracious and even beguiling appeals to you through the very serious scheme of design that is in each instance worked out.

McKim knew how to take a high view of his subject. He did not know how to be harsh or bleak. Was it not just his gift for beauty that kept him thus on the warm, human side of things, the same joyously creative impulse that had caused him to play so ingeniously with the little fabrics the firm put together at Newport? By all the rules of the Academy a style so pure as his should have culminated at a point spelling mere coldness for the ordinary observer, but McKim had a way of softening his severities when he felt that it was required. See how he modified the rather gaunt lines of the Italian palace he

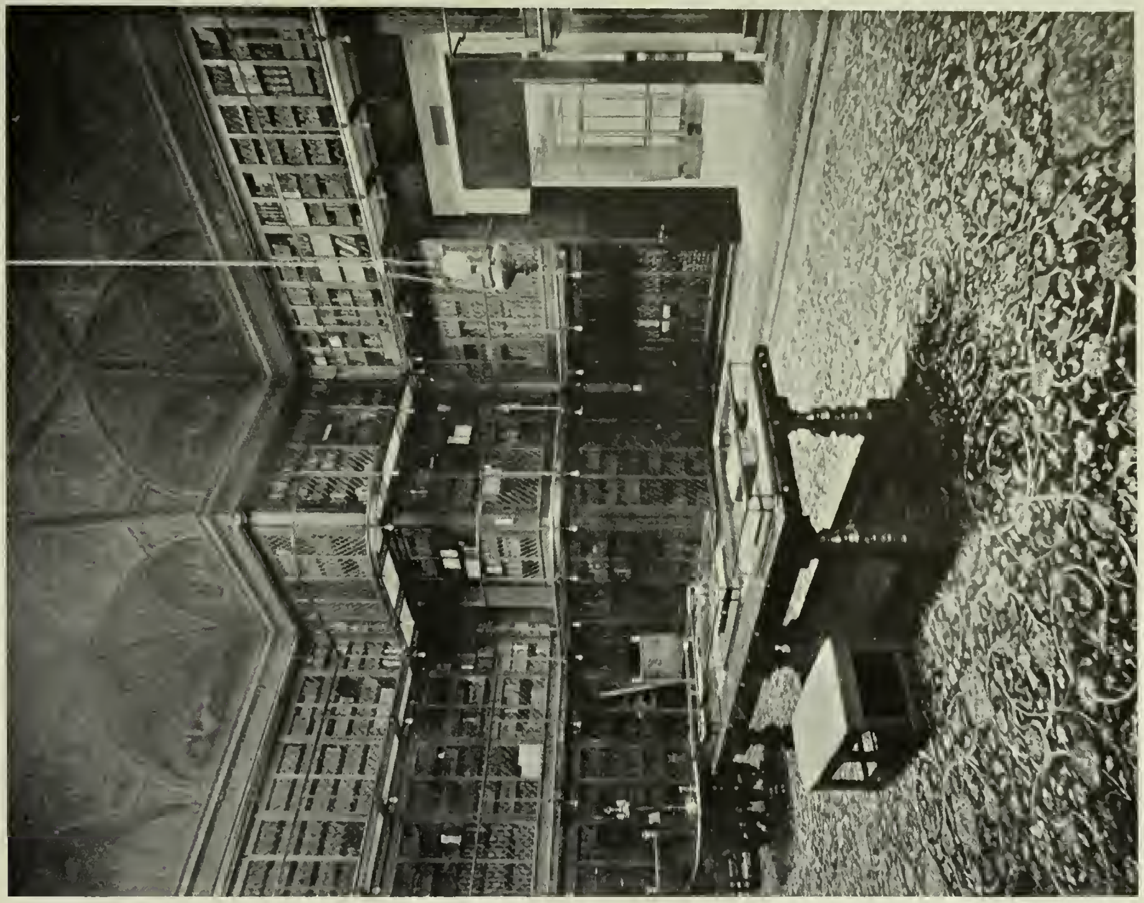


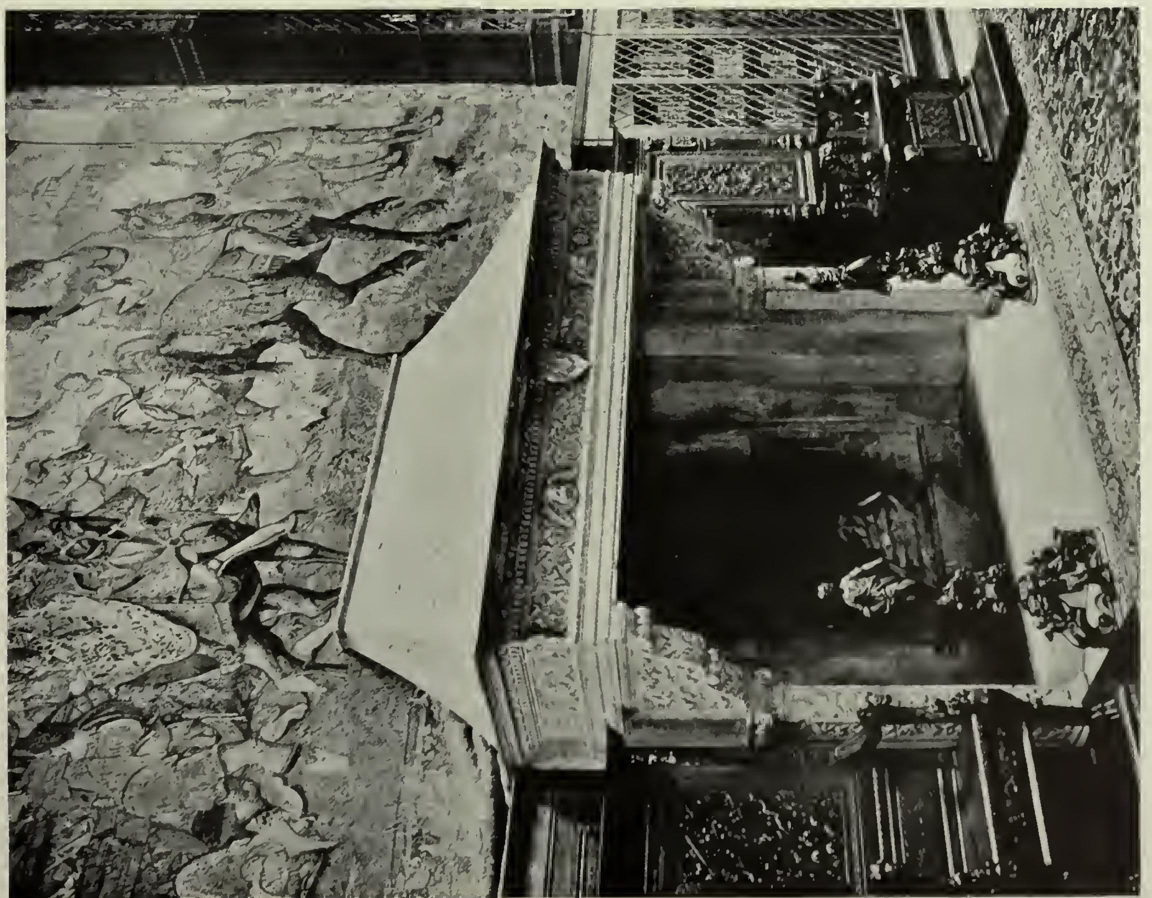
MODEL OF COLUMBIA UNIVERSITY.

built for the University Club in New York by the decorative touches which balconies and carven seals give to the facades. I remember, too, the brilliant *tou de force* of the New York State Building at the Chicago Fair in 1893. He made it a better building, a better piece of pure architecture, than the Villa Medicis at Rome, on which he modelled it. But what made it so extraordinarily successful was nothing more nor less than the festal suavity with which he tempered the majestic character of the



INTERIOR VIEWS, LIBRARY OF J. P. MORGAN, ESQ.
NEW YORK CITY.





INTERIOR VIEWS, LIBRARY OF J. P. MORGAN, ESQ.

design. The building was unmistakably monumental but it was a cheerful, welcoming structure, fitting with absolute precision into the holiday picture made by the exposition at large. We know how devotedly he and his numerous associates in the great undertaking at Chicago strove to preserve a classical sobriety amongst the main Exposition buildings, how earnest they were in their plans for a really noble sky-line, and, in short, how one of the most popular of modern demonstrations was charged with an artistic lesson. No one there was more exacting than was McKim, no one there was more steadfast in the advocacy of a lofty architectural standard. But no one, I may add, was a subtler adept in the process of enveloping serious ideas in garments of winning loveliness.

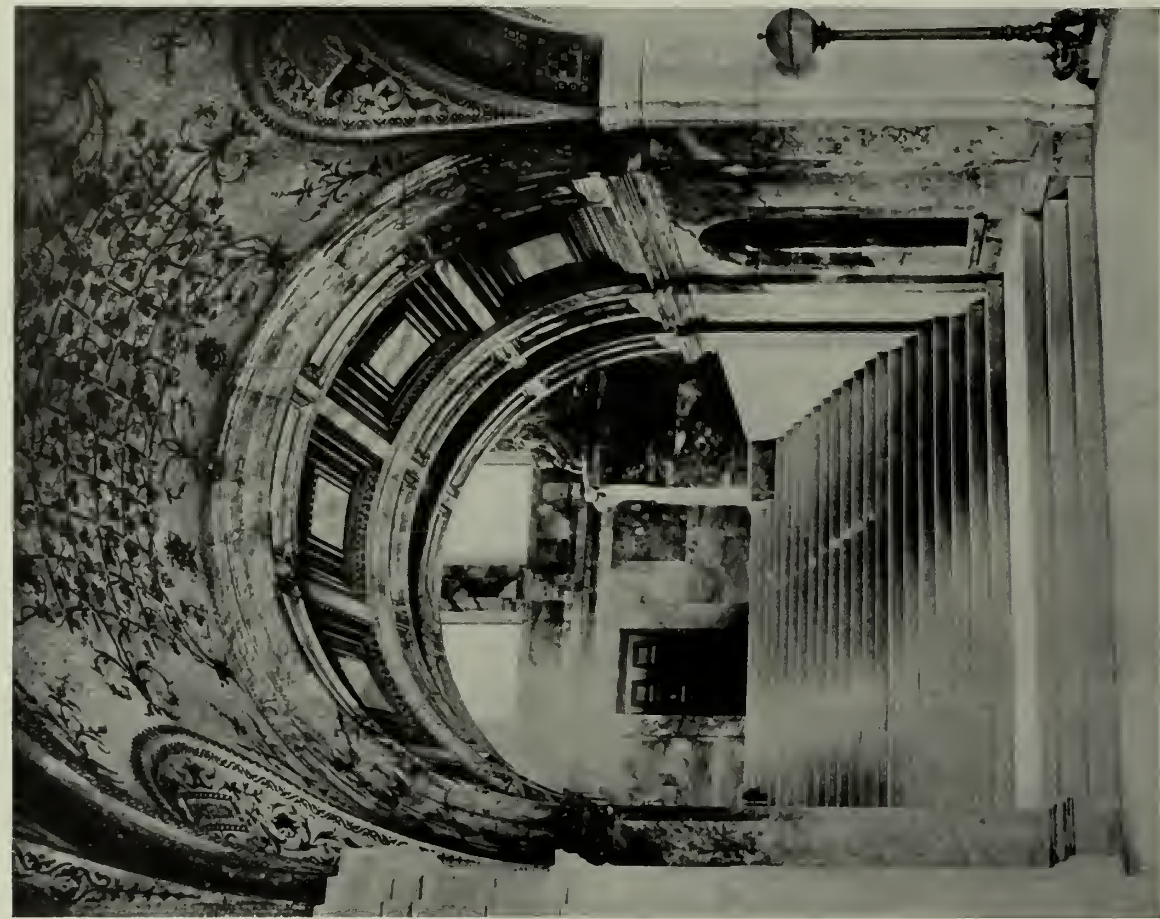
At the bottom of all his studies was not only that gift for beauty which I have mentioned, but a profound conviction of the place of character in architecture. The purpose of a building, the use to which it was destined, was something more than a practical condition enforced upon him by a client; it was an appeal to his imagination, stimulating his powers of design just as a proposal for a statue will set a sculptor's fingers tingling to press the clay. McKim was not, any more than any other great artist, infallible, and he had to learn some things by experience. The Public Library in Boston has been criticised as falling short of perfection in respect to its utilitarian function. Perhaps it is not impeccable. I confess that while I was in and out of it not infrequently at the time of its erection, and have since explored it more than once, I have never gone broodingly about the testing of its every corner. It is possible, no doubt, that there are corners in which the reader might wish for a little better light. But, when all is said, where, in this country, will you find a nobler library building, a nobler library building of the same scale and put to the same popular uses? I know that McKim and his partners gave unending study to the problem, and I can see him in Rome, years ago, poring over its monuments as one

THE COURT, BOSTON PUBLIC LIBRARY.

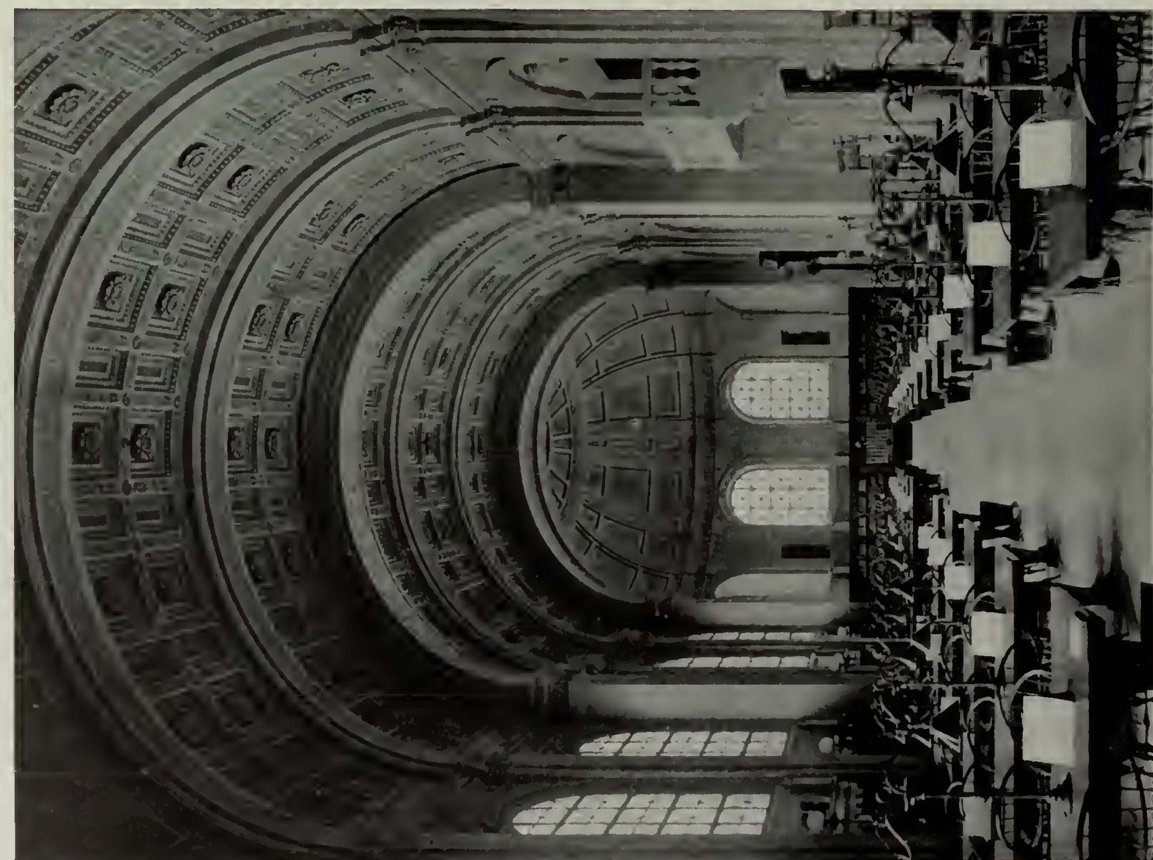
turns the pages of a book, looking for further inspiration. He had one of his draughtsmen with him, on whom he would call to sketch one detail or another that interested him. Was it in order that he might slavishly reproduce that detail? Not for a moment. It was rather as though he were yielding himself to the play of ideas as he interrogated the old masters, and wanted to jot down suggestive points developed in the process. These were not so much coordinated with his central scheme as they were subtly absorbed into it, to fertilize and enrich it. He was a striking instance of the artist who consults the past for a kind of broad invigoration, never as a methodical copyist.

In the presence of buildings like the one at Boston, or the State House at Providence, or the Pennsylvania Station in New York, or Mr. Morgan's inimitable little library, the student feels that he is down to the bed rock of pure architecture. Nothing experimental is visible, you find nothing irrelevant, nothing that is understated or overdone. The bones of the design, so to say, are faultlessly articulated, faultlessly with reference to the practical idea at the heart of the problem, and to this unit of construction there is given an envelope of beautiful simplicity. If there is decoration to be reckoned with you scarcely notice it, it is made part and parcel of the mass with such unerring taste. What you notice above all is the achievement of something like grandeur with a singularly elastic touch. Take, for example, the pillared facades of the Pennsylvania Station. For a positively Roman weight and majesty it would be impossible to beat that building in modern architecture. But neither could you find it anywhere surpassed for a beauty that I can perhaps best indicate as a beauty brimming over with nervous force, really vitalized, as though the thing which we call style were fairly singing in stone. The march of those columns is superb, luring the eye until it forgets the immobility of walls, cornices, and so on, and is lost in sensuous delight. It is a huge structure, and, for the mind sensitive to the great pageant

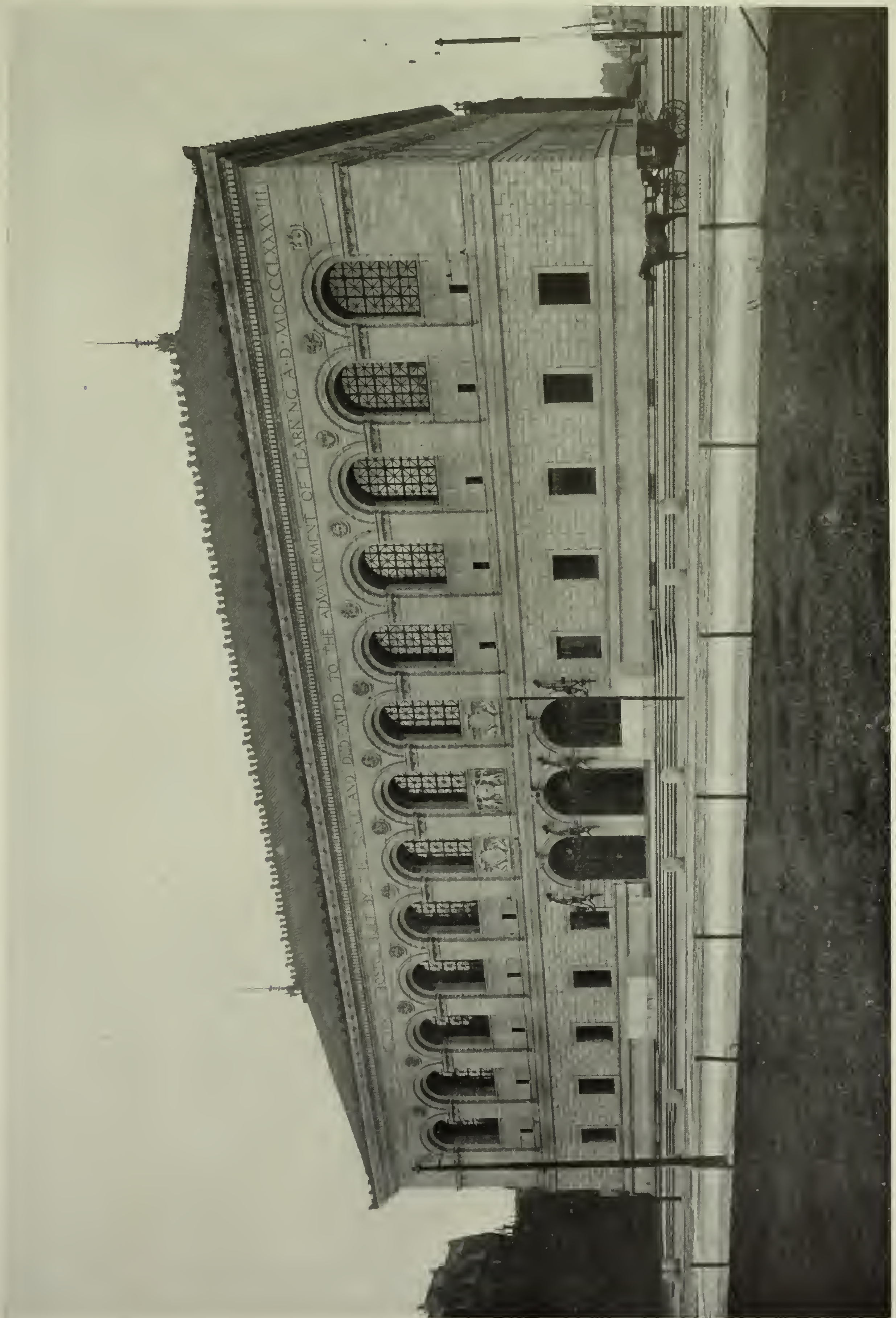
MAIN STAIR HALL, BOSTON PUBLIC LIBRARY.



STAIRWAY FROM ENTRANCE HALL.

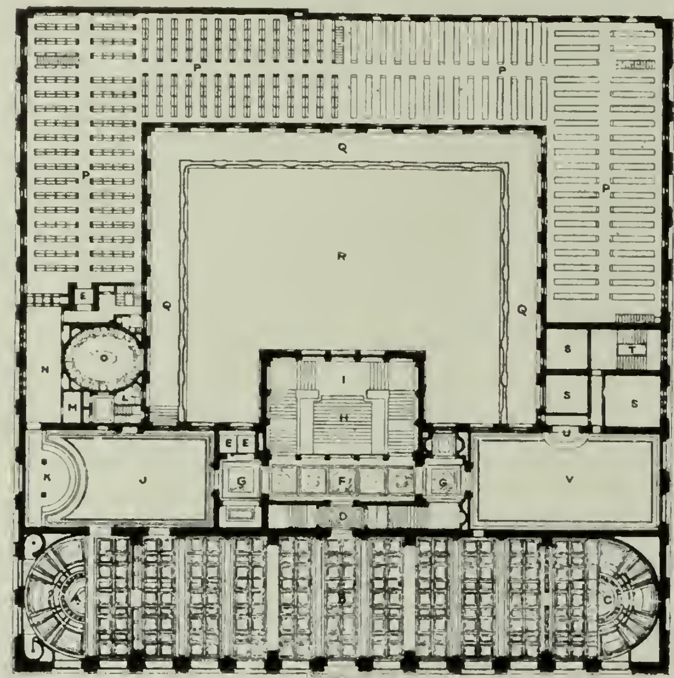


BATES HALL, BOSTON PUBLIC LIBRARY.

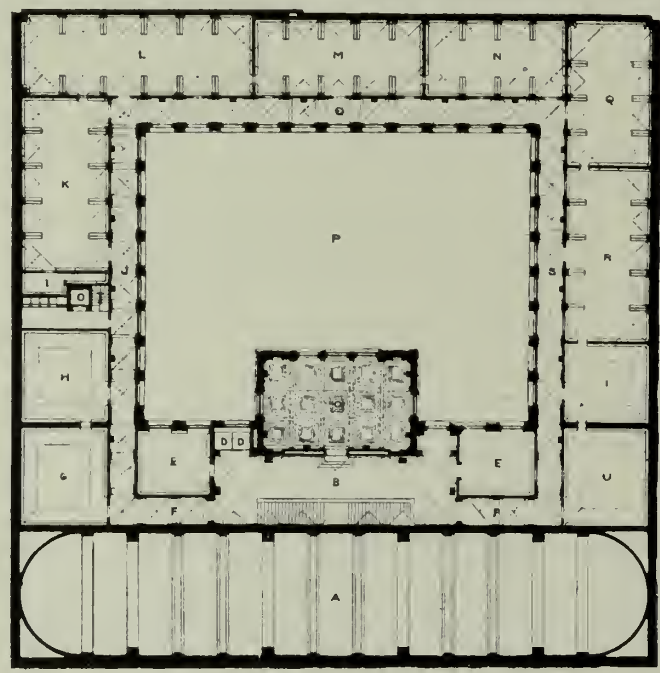


BOSTON PUBLIC LIBRARY,
BOSTON, MASS.

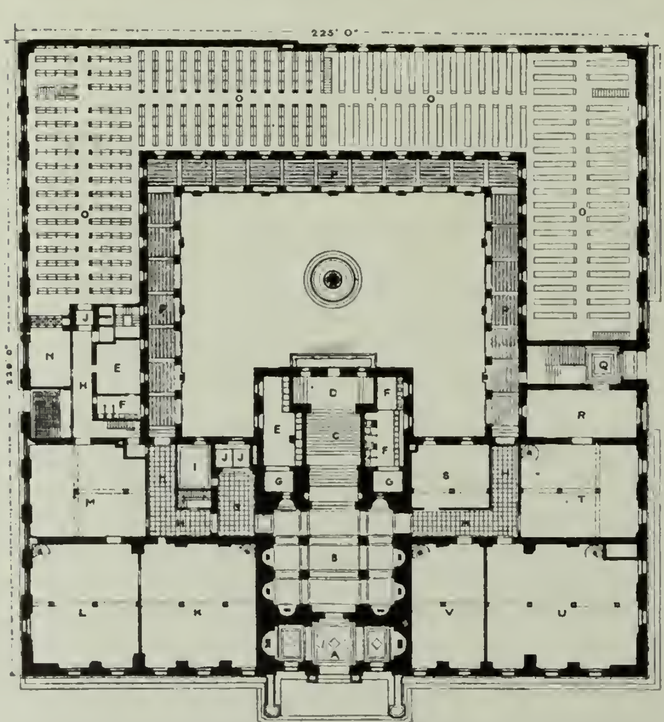
of our material progress, it is fraught with ideas of tremendous and even ruthless power. After all, a building like this is symbolical of one of the forces of our national life, and a poet might reasonably linger before it, presently translating into words the thought it raises of an irresistible might. But the right poet would turn what is stark and terrible about such a concentration of energy into terms of pure



PLAN OF READING ROOM FLOOR.



PLAN OF SPECIAL LIBRARY FLOOR.



PLAN OF GROUND FLOOR.

PLAN OF GROUND FLOOR.

A Vestibule, 16′ x 55′.
B Entrance Hall, 37′ x 44′.
C Grand Staircase, 20′ wide.
D Landing, 12′ x 19′.
E Cloak Room.
F Lavatory and Water Closet.
G Lobby.
H Corridor, 10′ wide.
I Waiting Room, 12′ x 16′.
J Elevator.
K Cataloguer, 42′ x 45′.
L Official Card Catalogue, 30′ x 45′.
M Receiving and Ordering Department, 35′ x 42′.
N Custodian, 14′ 6″ x 21′ 6″.
O Stack.
P Arcade.
Q Staircase Hall, 14′ wide.
R Duplicate Exchanges, 17′ x 39′ 6″.
S Reserved Space, 23′ x 28′.
T Unbound Pamphlets and Duplicate Exchanges, 33′ 6″ x 42′ 6″.
U Bound Newspapers, 45′ x 55′.
V Map Room, 26′ 6″ x 45′.

PLAN OF READING ROOM FLOOR.

A Card Catalogue.
B Bates Hall, 42′ 6″ x 218′.
C Writing Room.
D Lobby, 8′ x 10′.
E Elevator, 6′ x 6′ 6″.
F Hall, 15′ x 50′.
G Vestibule, 15′ x 24′.
H Grand Staircase.
I Landing, 12′ x 19′.
J Waiting Room, 33′ 6″ x 65′.
K Delivery Desk.
L Lavatory.
M Cloak Closet.
N Delivery, 12′ 6″ x 40′.
O Trustees Room, 23′ x 27′.
P Stack.
Q Arcade.
R Court.
S Special Students.
T Staircase.
U Attendant.
V Scientific Periodicals, 33′ 6″ x 65′.

PLAN OF SPECIAL LIBRARY FLOOR.

A Reading Room Continued, 22′ 6″ above floor.
B Hall, 24′ x 84′.
C Art Room, 31′ x 51′.
D Elevator, 5′ x 6′ 6″.
E Reserved, 22′ 6″ x 25′.
F East Gallery.
G Thayer, Nichols and Franklin Libraries, 30′ x 34′.
H Ticknor Library, 30′ x 32′.
I Service.
J South Gallery, 9′ x 139′ 6″.
K Medical Library, 30′ x 68′.
L Patent Library, 38′ 6″ x 79′ 6″.
M Barton Library, 27′ x 58′.
N Parker Library, 27′ x 48′ 6″.
O West Gallery, 9′ x 157′.
P Court.
Q American Public Documents, 30′ x 50′ 6″.
R English Public Documents, 30′ x 61′.
S North Gallery, 9′ x 139′ 6″.
T Prince Library, 27′ 6″ x 30′.
U Bowditch Library, 30′ x 34′.

PLANS, BOSTON PUBLIC LIBRARY.

beauty, and this is what has been done by the genius of architecture directed upon so seemingly prosaic a thing as a vast railway station. The building is true in its very essence to the railway's need. It is also supremely beautiful.

We think in large terms in this country. Our area is immense, our population is enormous; politically, socially, and in our industrial relations we are incessantly affected by the unprecedented width of our horizon. It is a commonplace of satirical criticism that "bigness" is an American foible. Neither the painter nor the sculptor is ordinarily required to come to close quarters with that foible. The architect alone is forever confronted by it, and therefore exposed to a cruel temptation. McKim mastered it. He liked, I think, to tackle heroic issues. In the latter part of his career he threw himself with gusto upon the solution of problems like the one presented in the Pennsylvania Station. His genius had an even more extensive range as one may gather from the share he took in the evolution of the scheme for the beautifying of the city of Washington. Who could have blamed him if, in the prosecution of campaigns so portentous in scope, he had completely lost sight of those ideals of exquisiteness, of charm, of delicately fervid art, with which he had begun his work side by side with Mead and White? They never lost sight of them. Shoulder to shoulder they went on as the years passed, rising to their greater opportunities with increasing firmness of grasp and with increasing feeling for beauty. They were always builders in the truest, manliest sense of the term, and they were always artists. It is in this dual character that McKim remains a shining figure in our annals.


COLONNADE, BOSTON PUBLIC LIBRARY.

MAIN ENTRANCE, BOSTON PUBLIC LIBRARY.

Charles Follen McKim—A Character Sketch

BY HENRY BACON

CHARLES FOLLEN McKIM occupies a place in the history of American architecture, the honor of which will increase with passing years. Respected now for a power in the art of design which constantly increased and which was manifested in numerous great achievements, his works will be studied to advantage in future generations by the student, practitioner, and layman.

More than twenty years ago the writer entered the office of McKim, Mead & White and enjoyed a close relationship with Mr. McKim, whose unfailing friendship was shown to him in many ways. His method of working was characteristic and it may prove interesting to read an account of it by one who was long privileged to observe it at short range.

The foremost trait of Mr. McKim was buoyancy of spirit, an invaluable aid to him as well as to those under him, in the long and tedious processes he followed in the evolution of a design. With this buoyancy he approached the drawing table, bringing with him a rough sketch of the problem to be solved. In the sketch his idea was evident, but most indefinitely drawn, and in no stage of planning and designing did he make a definite line or contour. With each visit to the table he would express appreciation of the draughtsman's work and generally would be enthusiastic over it. Invariably, however, he would place tracing paper over the drawing, and, with pencil sometimes in one hand and some-

THE EDGAR HOUSE,
NEWPORT, R. I.

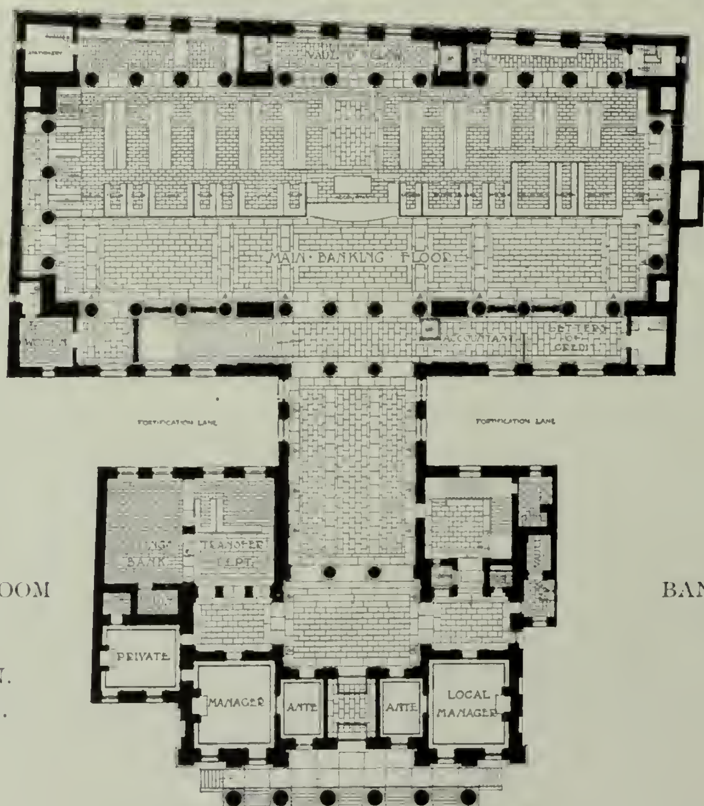
times in the other, for he was ambidextrous, he would lightly sketch a revision of the scheme, smudging the already indefinite lines with his finger till the result would look like the sketch for Bellevue Hospital which is here shown on page 47.

As a specimen of his earlier draughtsmanship, the reader is referred to another reproduction on page 47 of a charming sketch of a Newport house. Several sketches of this character would be made at one sitting, each varying from the others in general composition, but each showing some definite idea. The draughtsman was then expected to put into right lines and contours the sketch selected for the project and draw carefully the details and ornament. Mr. McKim's inspection of this drawing would result in further studies by him, the design then being again drawn carefully by the draughtsman, and so on until it was, in his opinion, ready for study in perspective.

The same study was expended on the perspective that had been devoted to previous drawings. Change after change would be made during this stage, and later, in many cases, the design would be studied similarly in small plaster models. All of these processes would involve, of course, either changes in all the drawings, or entirely new sets of drawings, but no prospect of expense or labor would deter Mr. McKim from an endeavor to improve his project. This method was sure to accomplish a well finished result. It was arduous, but the fatigue of the draughtsman's mind and body was immensely relieved by Mr. McKim's contagious enthusiasm and his unceasing encouragement.

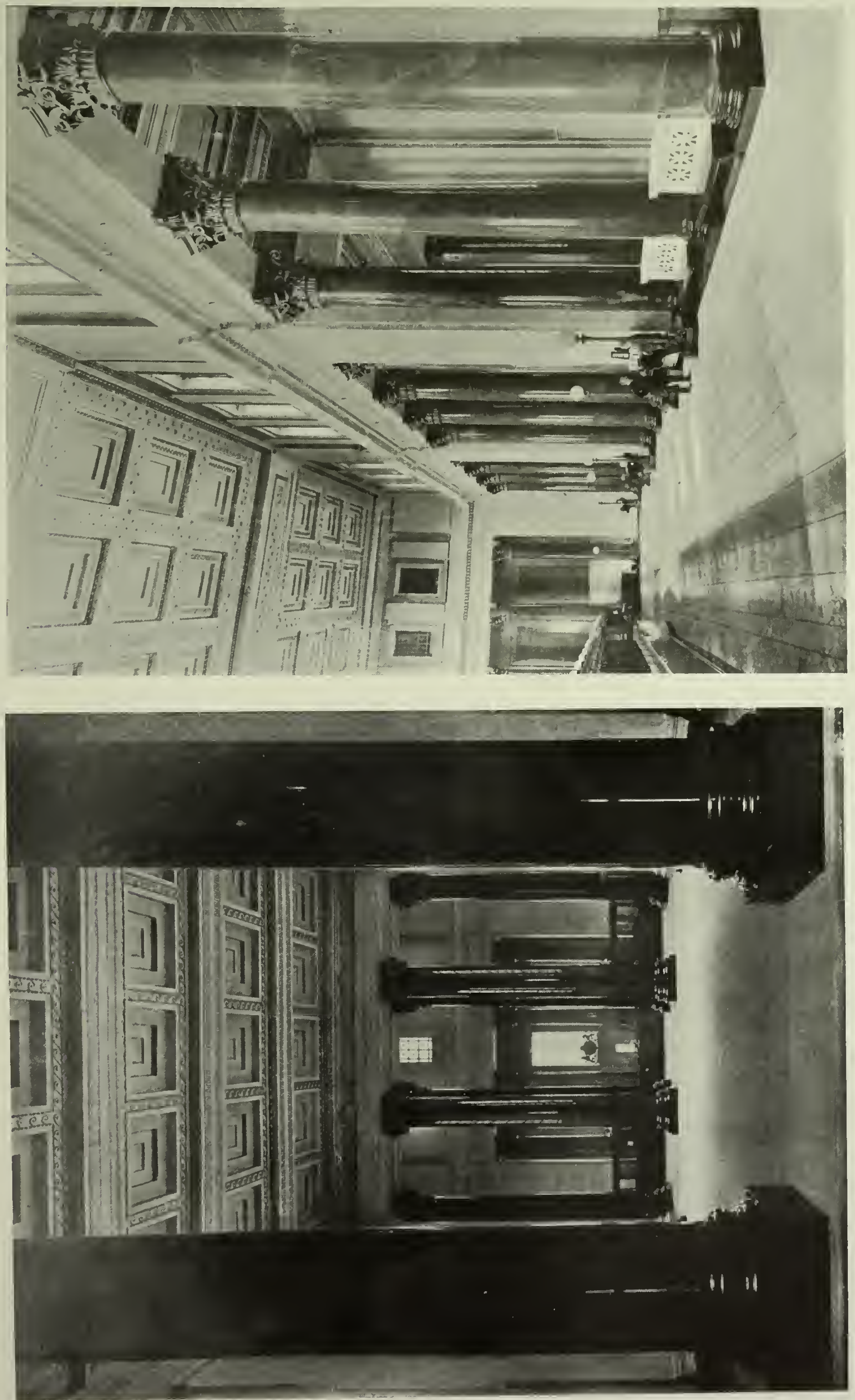
In preparing letters or telegrams he was extremely particular in the choice of words and arrangement of phrases and would usually ask for the attendance of one or the other of his draughtsmen, while he framed a communication, even on unimportant matters. The writer remembers being asked by Mr. McKim to be present on one occasion, when he was about to dictate a telegram. It finally con-

ARCHITECTURAL BUILDING, HARVARD UNIVERSITY.



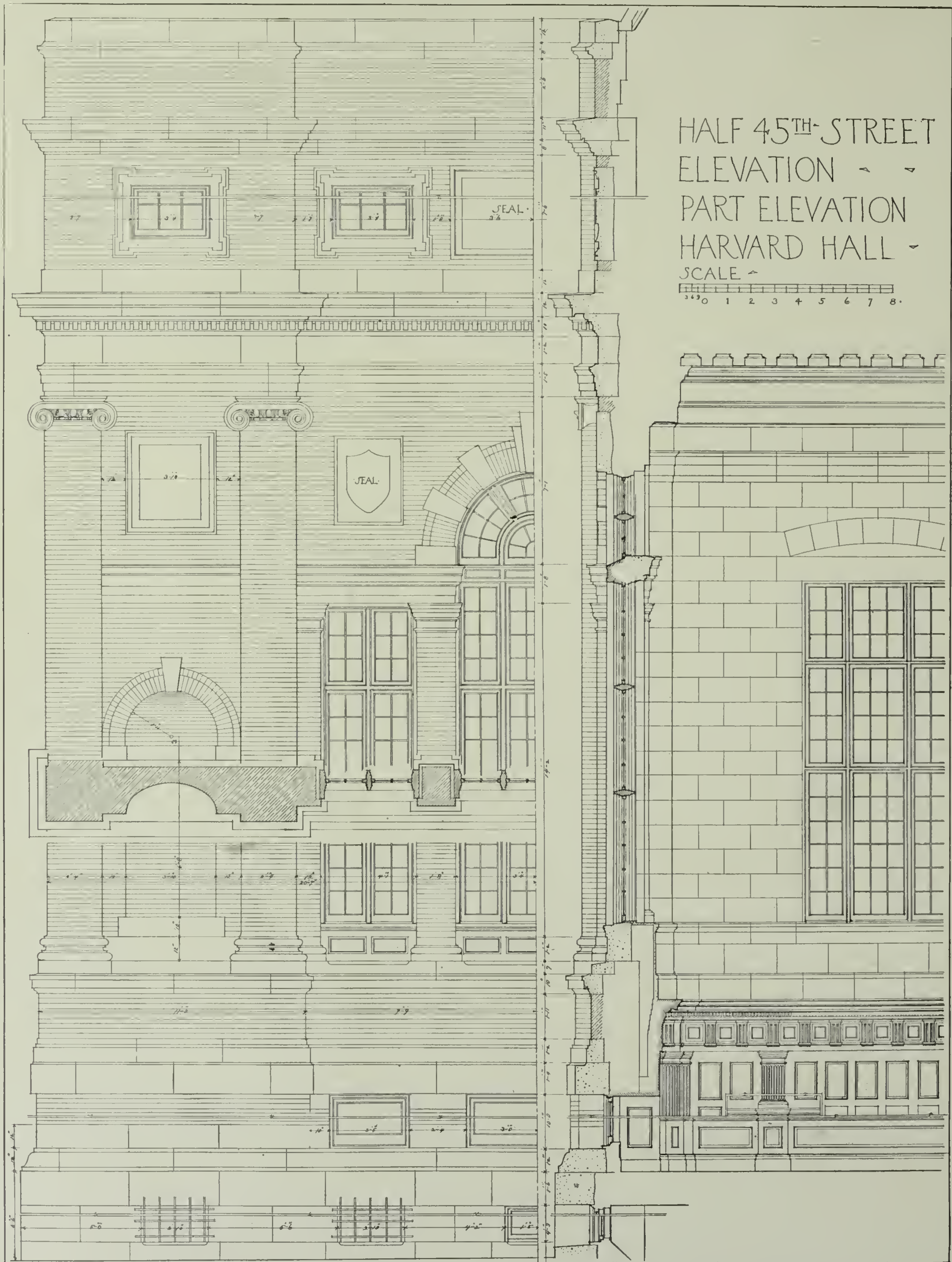
VIEW OF BANKING ROOM
AND
MAIN FLOOR PLAN.

BANK OF MONTREAL,
MONTREAL,
CANADA.

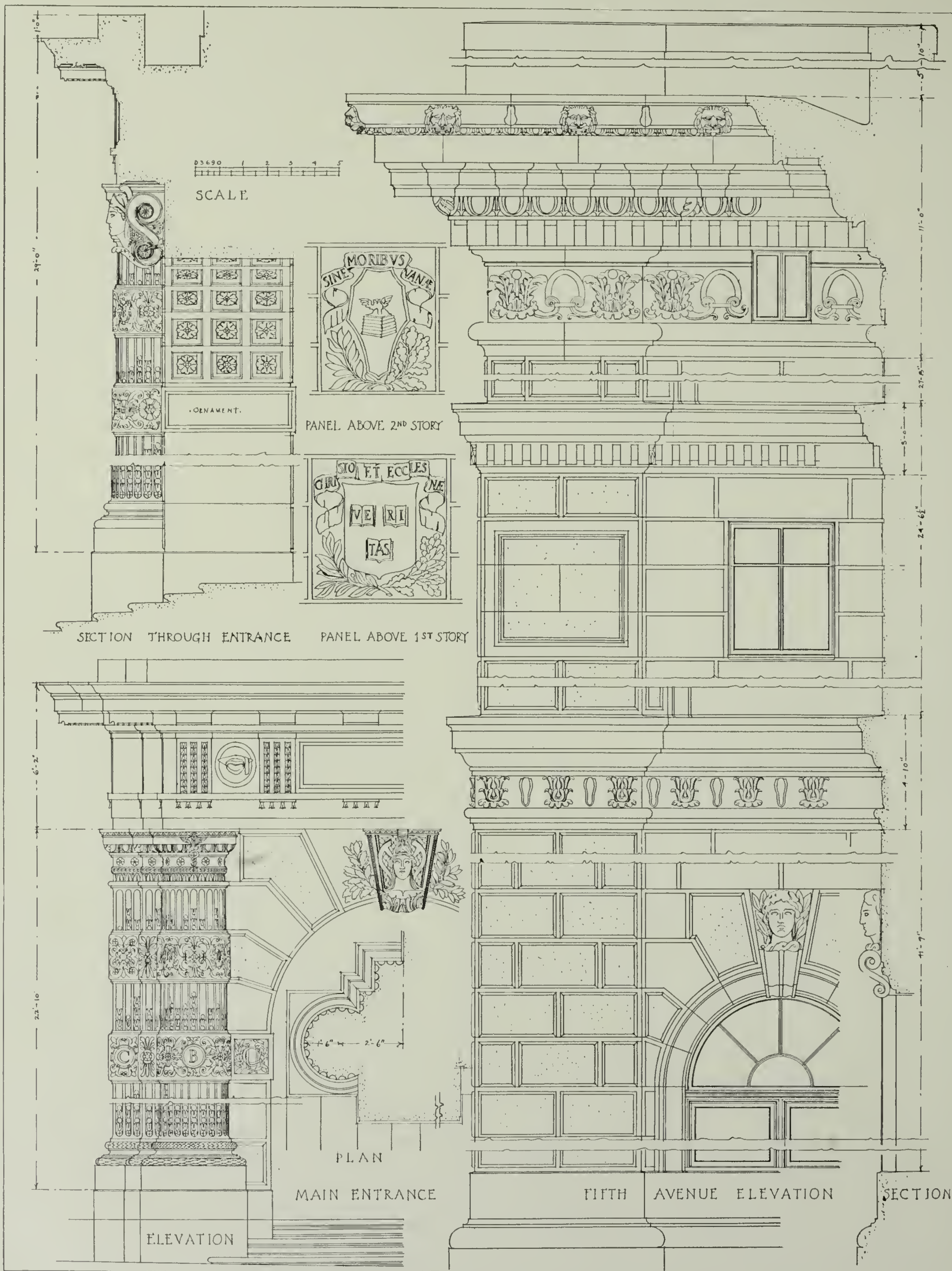


INTERIOR VIEWS, BANK OF MONTREAL.

INTERIOR VIEWS, NATIONAL CITY BANK,
NEW YORK CITY.

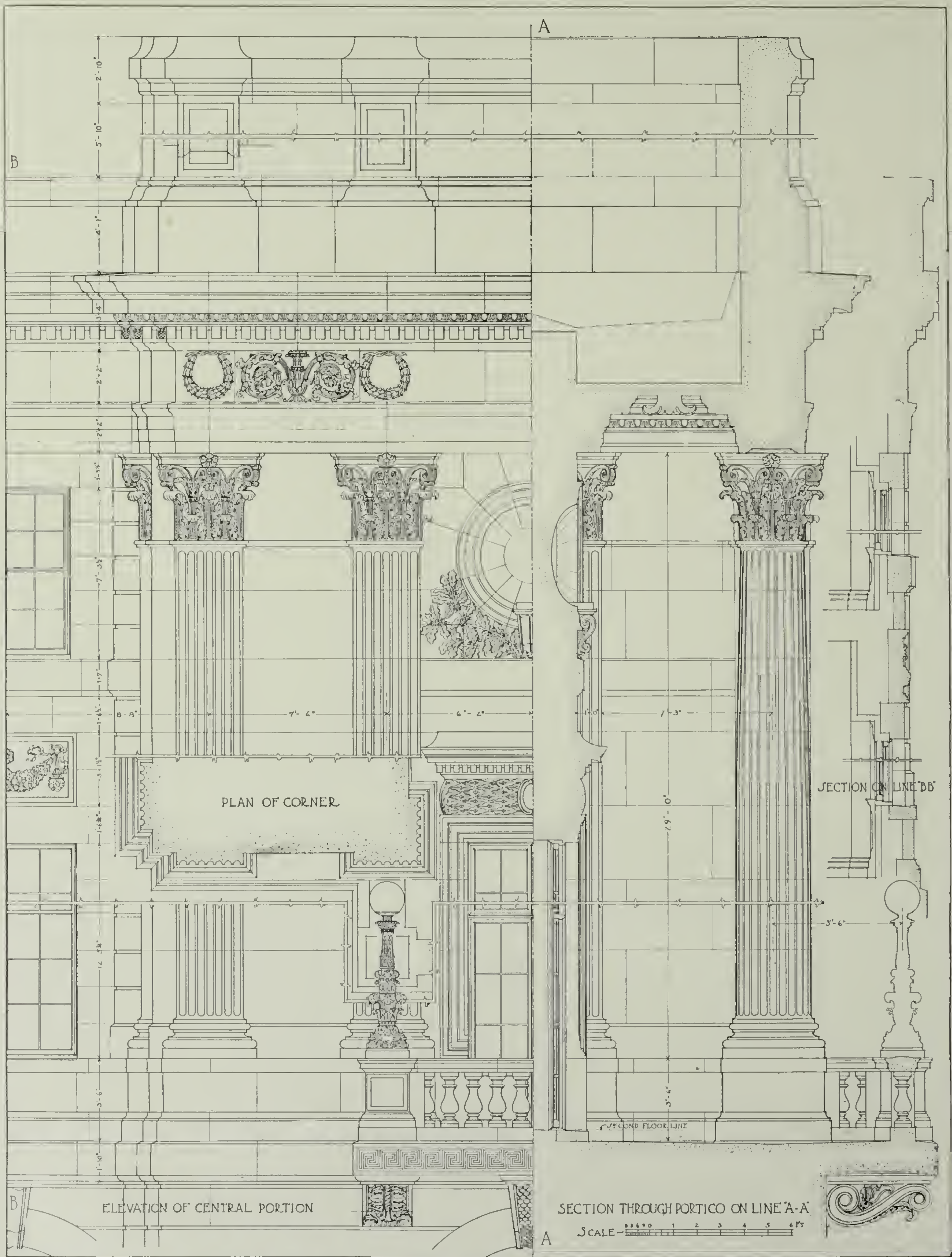


EXTERIOR AND INTERIOR DETAILS OF HARVARD HALL, HARVARD CLUB, NEW YORK CITY.

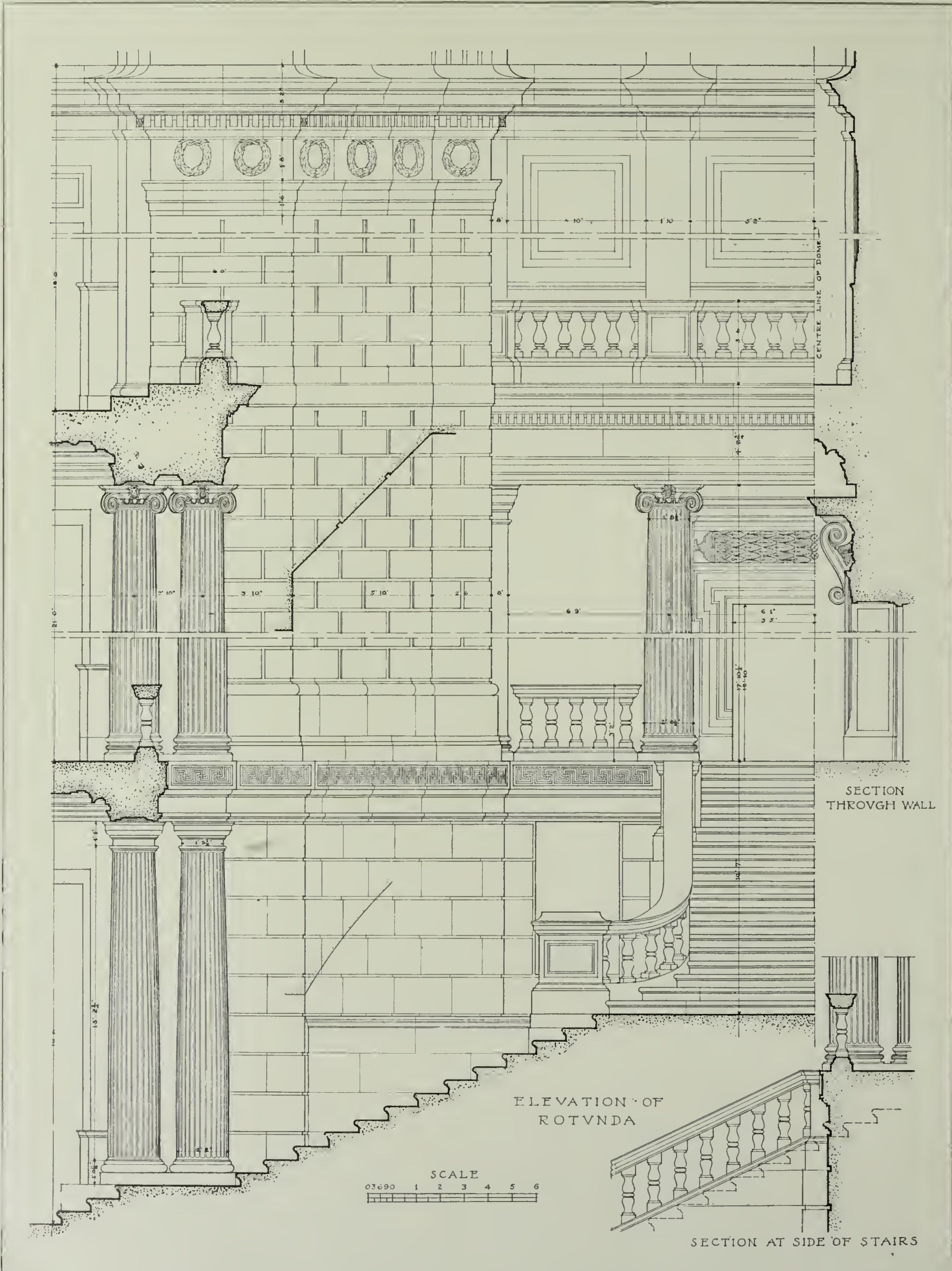


EXTERIOR DETAILS, UNIVERSITY CLUB, NEW YORK CITY.

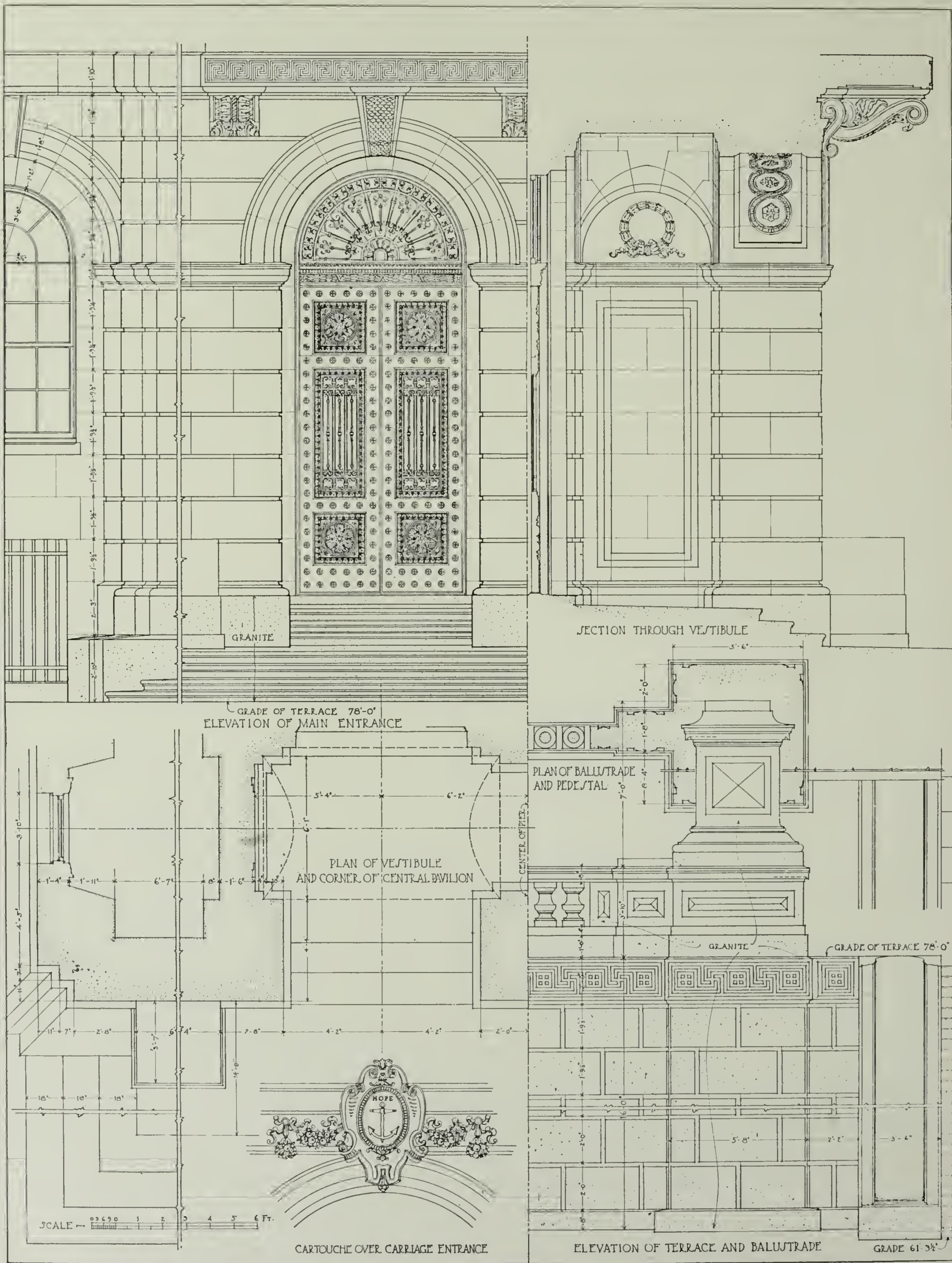
ENTRANCE PORTICO, SYMPHONY HALL, BOSTON, MASS.



PORTICO OVER ENTRANCE, RHODE ISLAND STATE CAPITOL, PROVIDENCE, R. I.

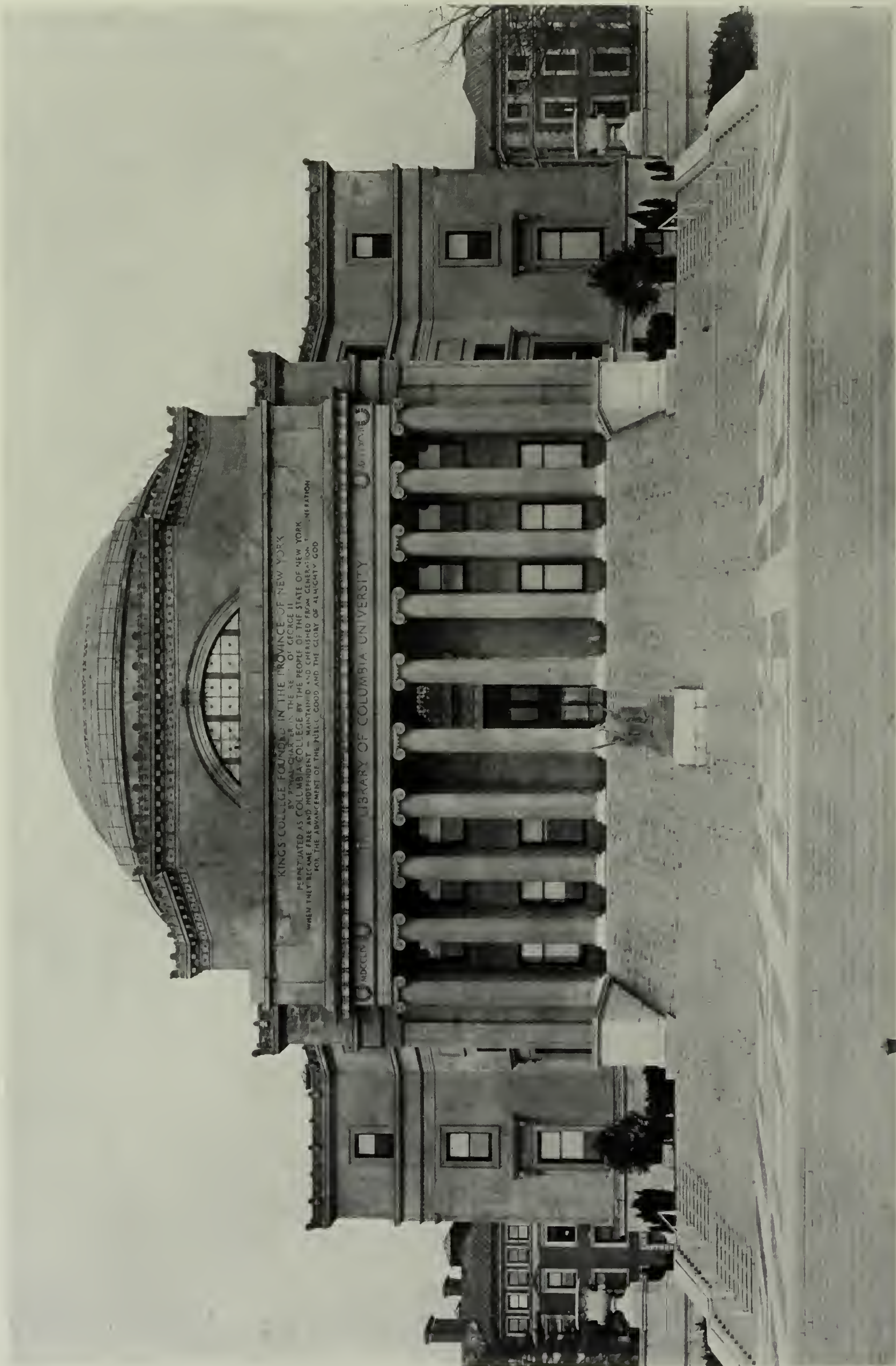


DETAILS OF ROTUNDA, RHODE ISLAND STATE CAPITOL, PROVIDENCE, R. I.

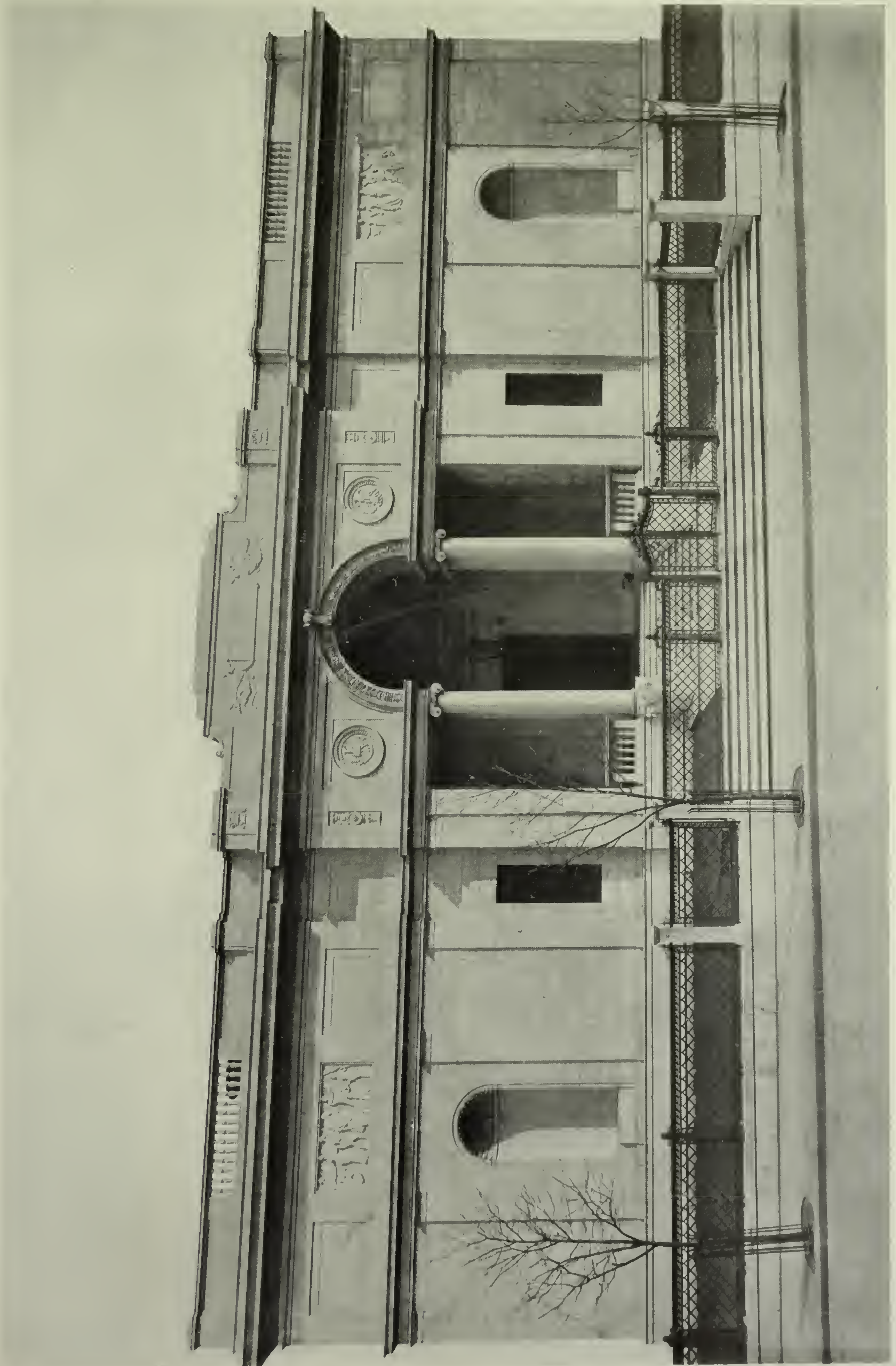


DETAILS, FIRST STORY AND ENTRANCE, RHODE ISLAND STATE CAPITOL, PROVIDENCE, R. I.

RHODE ISLAND STATE CAPITOL, PROVIDENCE, R. I.

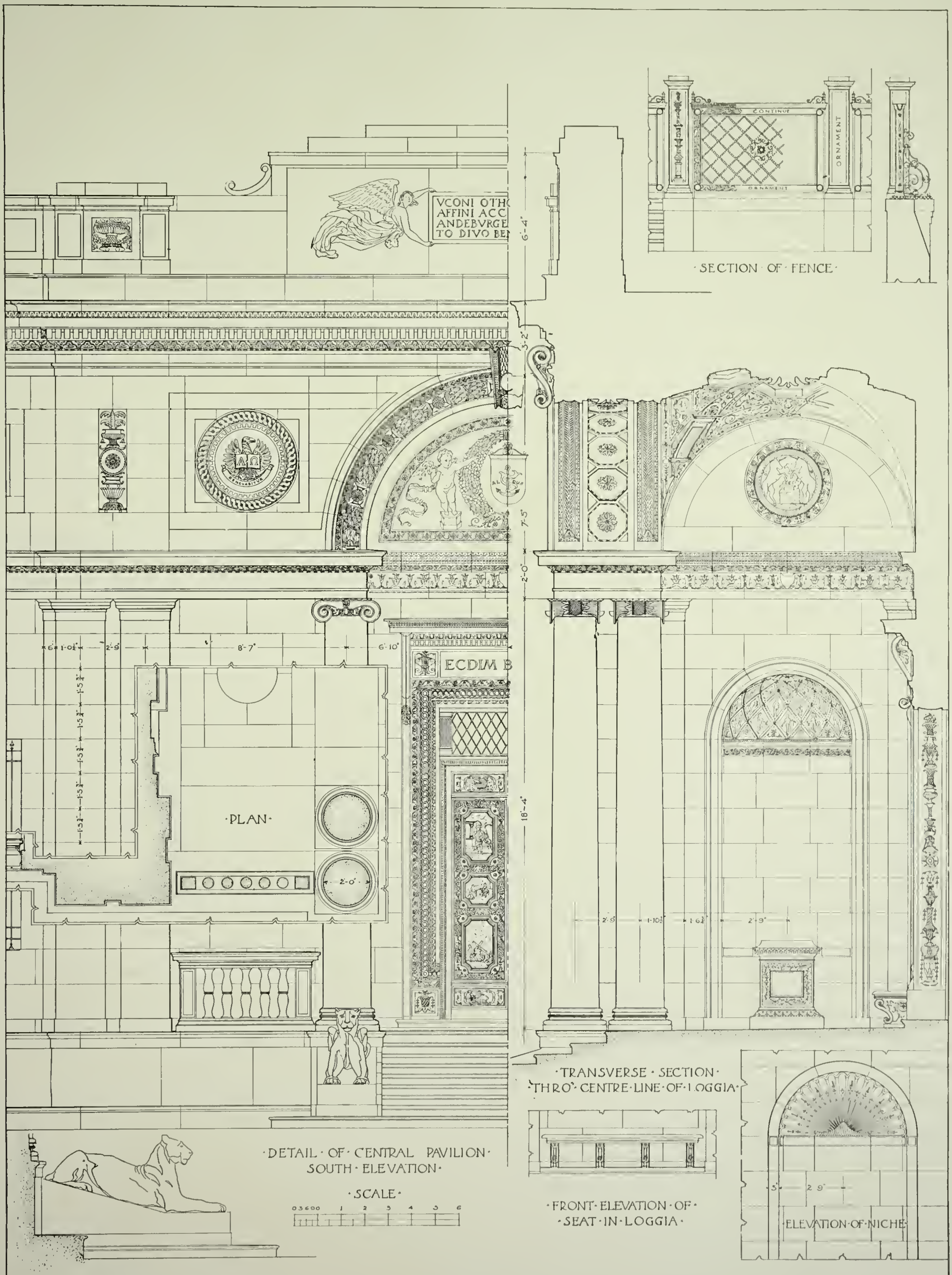


AVERY LIBRARY, COLUMBIA UNIVERSITY, NEW YORK CITY.



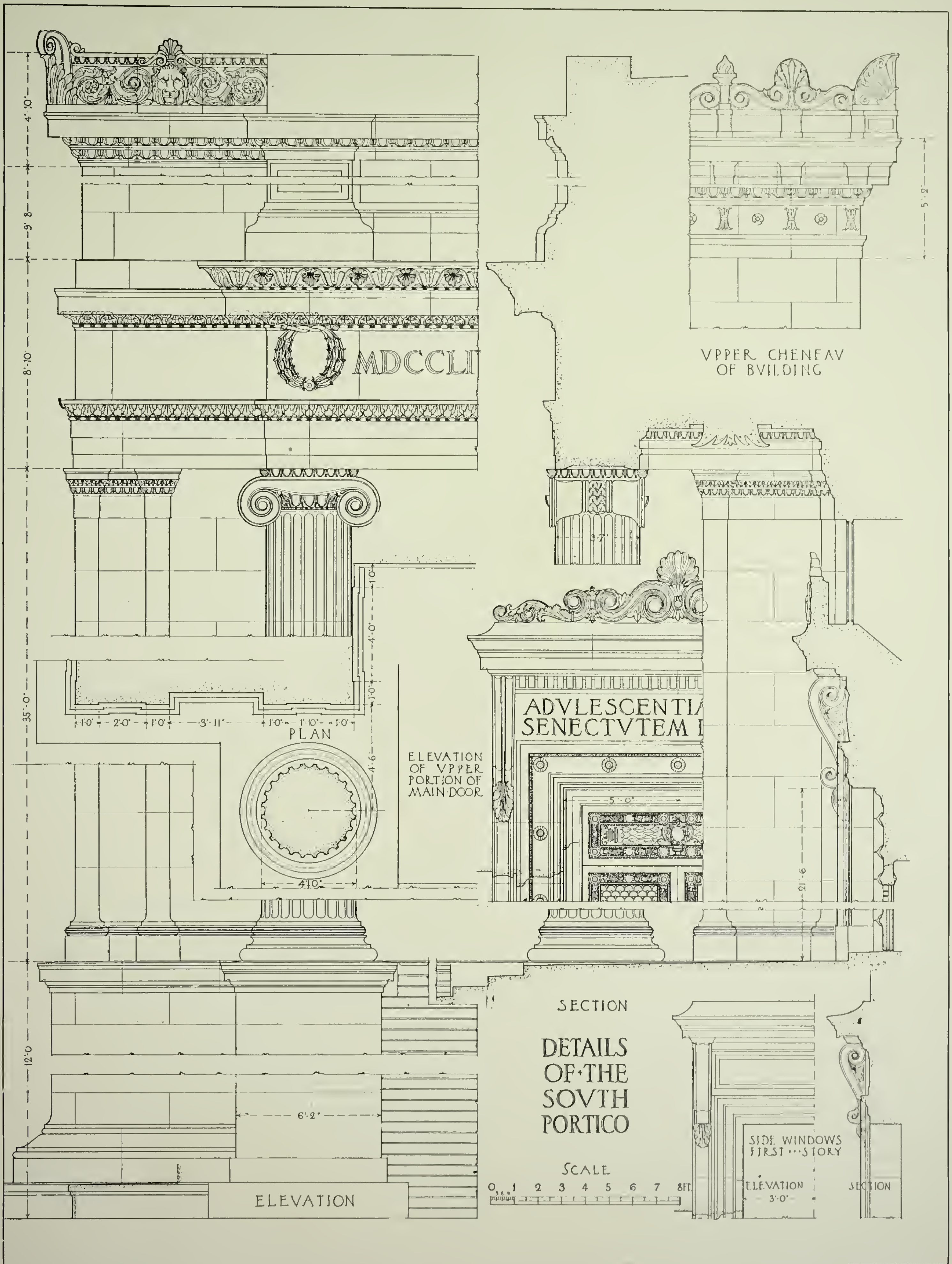
LIBRARY OF J. P. MORGAN, ESQ., NEW YORK CITY.

UNIVERSITY CLUB, NEW YORK CITY.

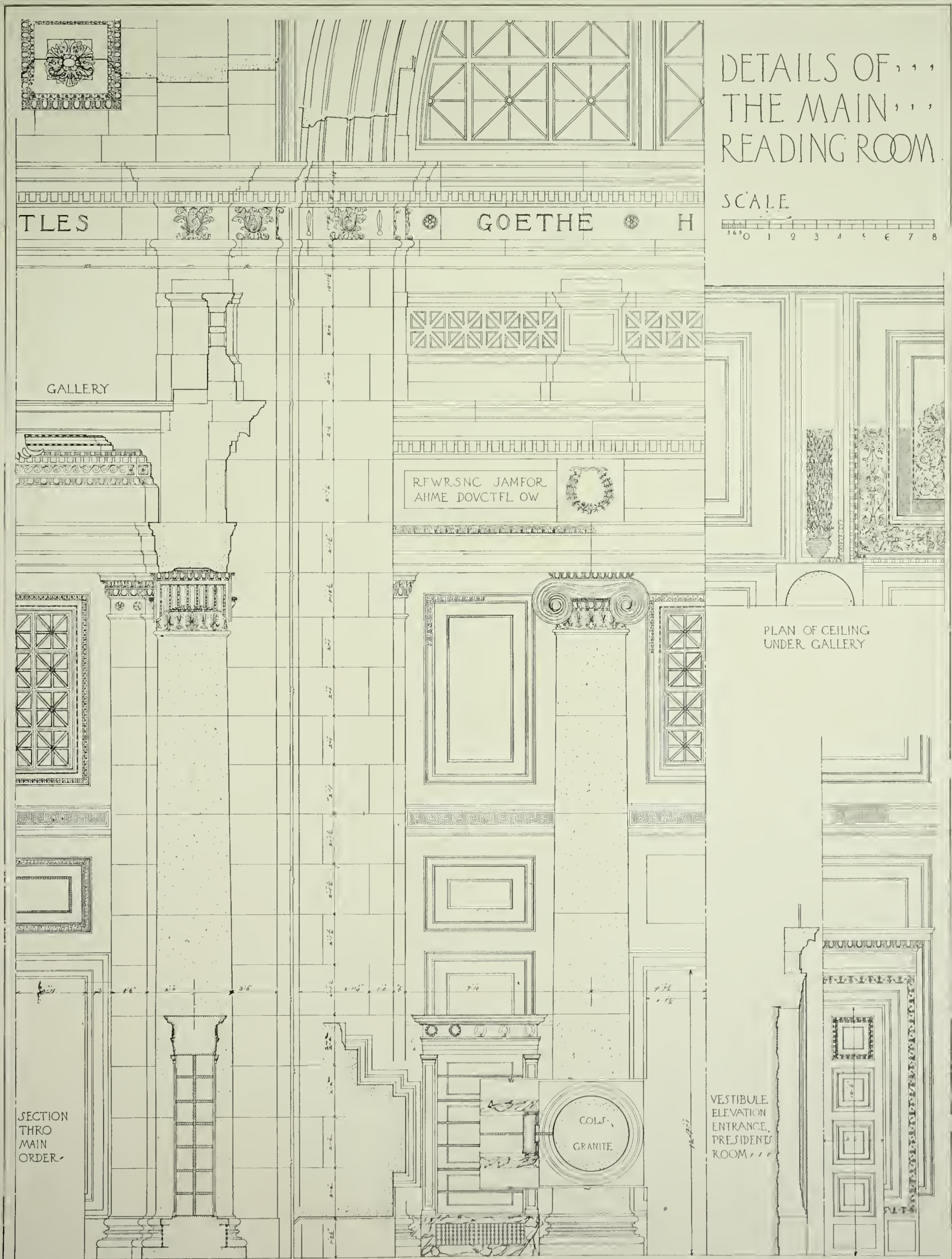


DETAILS OF MAIN FACADE, LIBRARY OF J. P. MORGAN, ESQ., NEW YORK CITY.

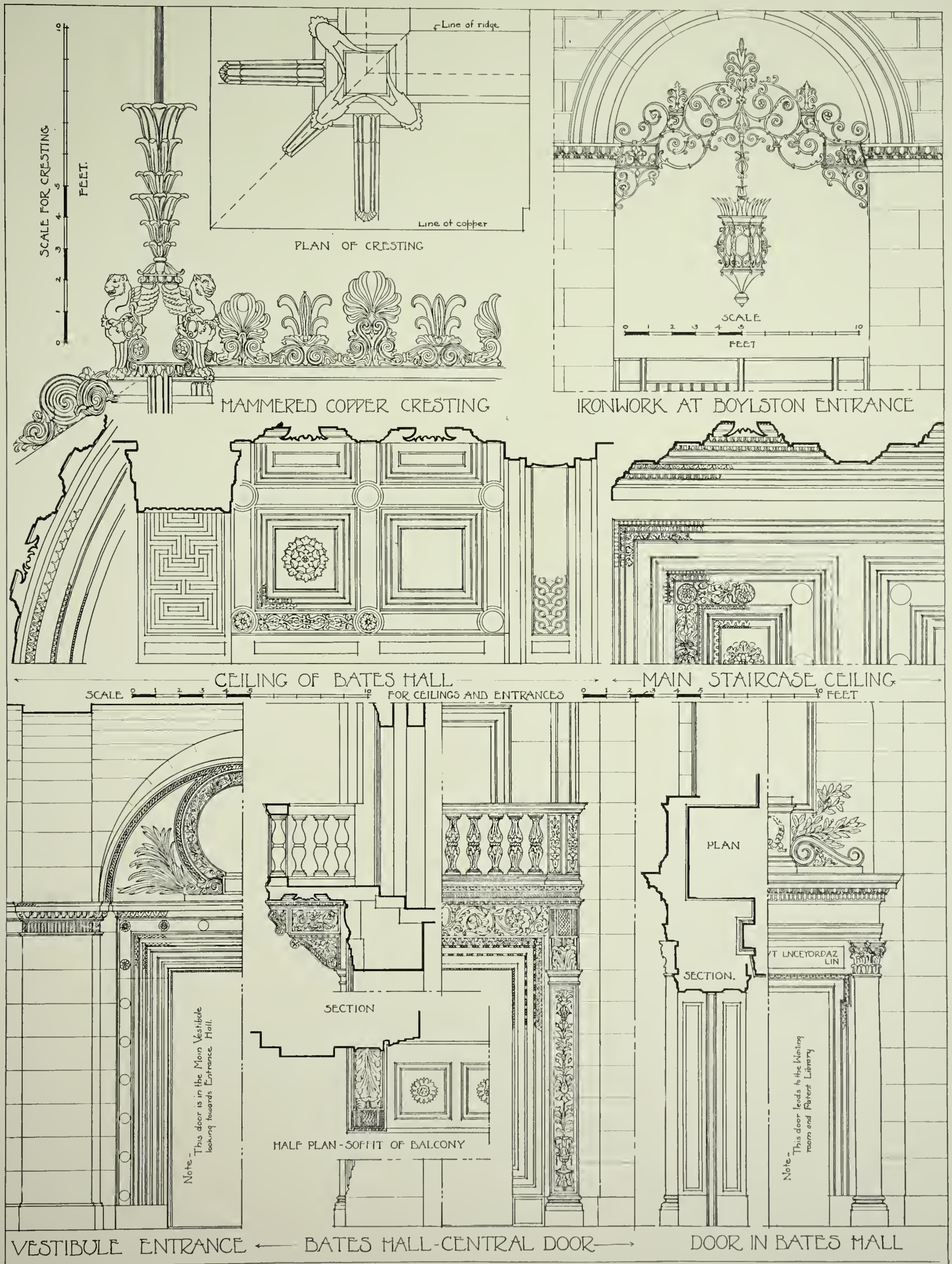
DETAILS OF INTERIOR, LIBRARY OF J. P. MORGAN, ESQ., NEW YORK CITY.



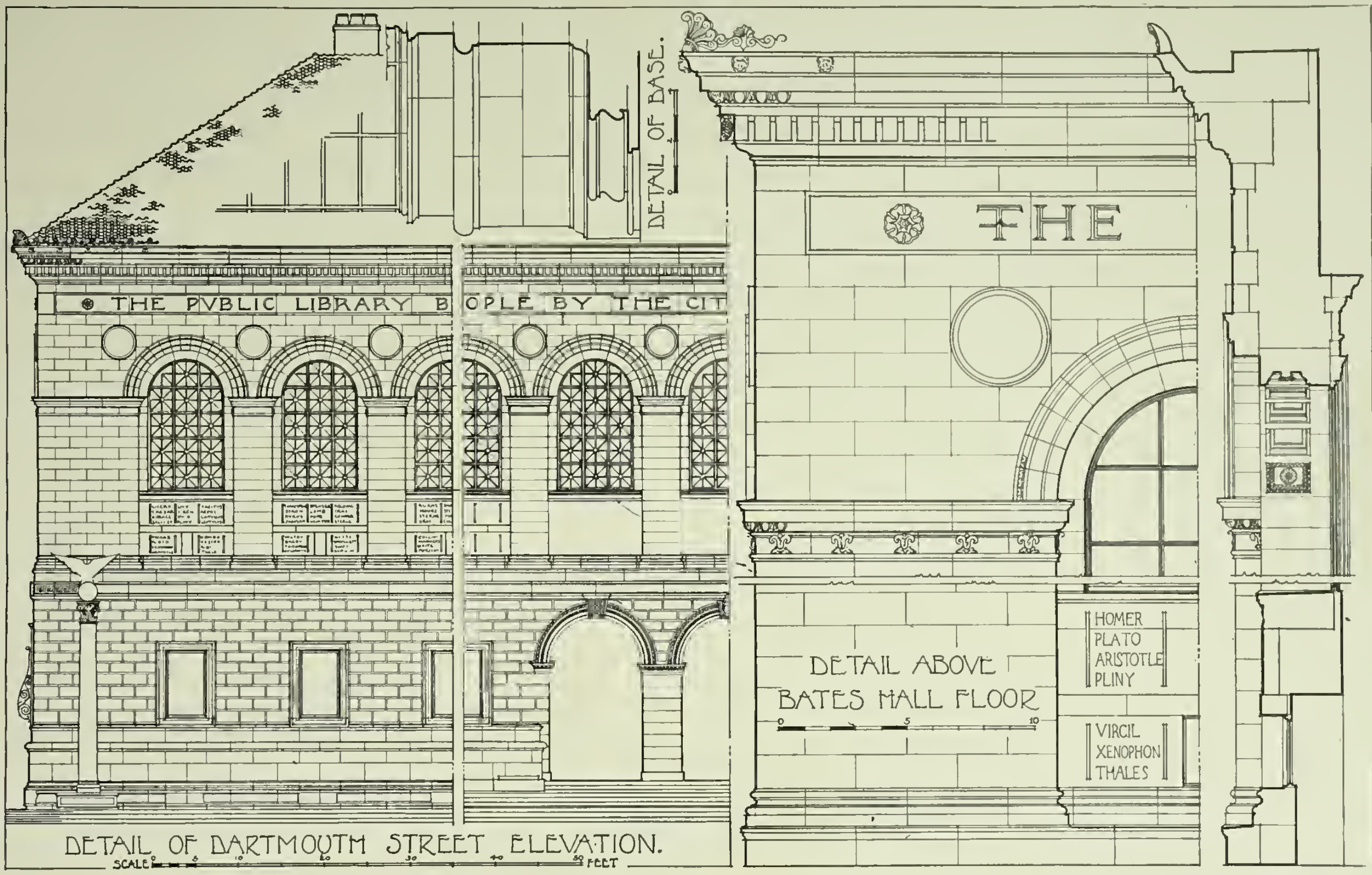
DETAILS OF PORTICO AND MAIN ENTRANCE, LIBRARY AT COLUMBIA UNIVERSITY, NEW YORK CITY.

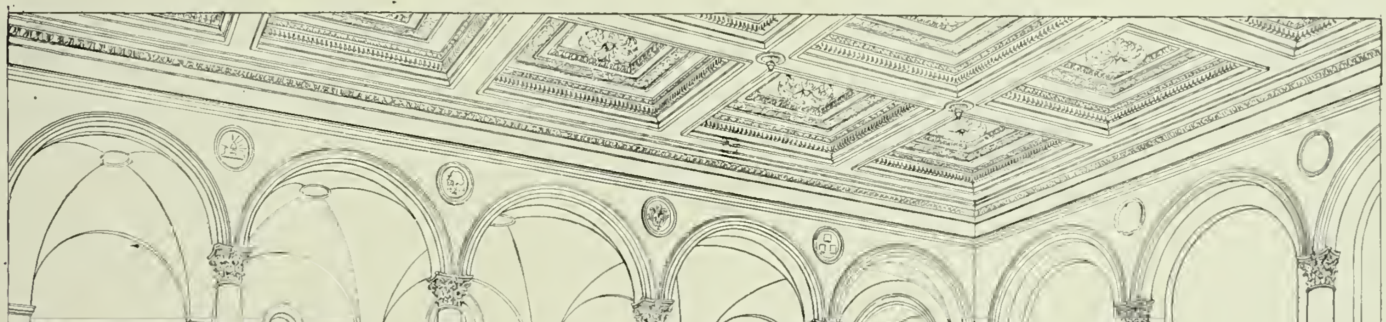


DETAILS OF ROTUNDA AND MAIN READING ROOM, LIBRARY AT COLUMBIA UNIVERSITY, NEW YORK CITY.



DETAILS, BOSTON PUBLIC LIBRARY, BOSTON, MASS.





DETAILS OF EXTERIOR AND MAIN STAIR HALL, BOSTON PUBLIC LIBRARY, BOSTON, MASS.

RHODE ISLAND STATE CAPITOL,
PROVIDENCE, R. I.

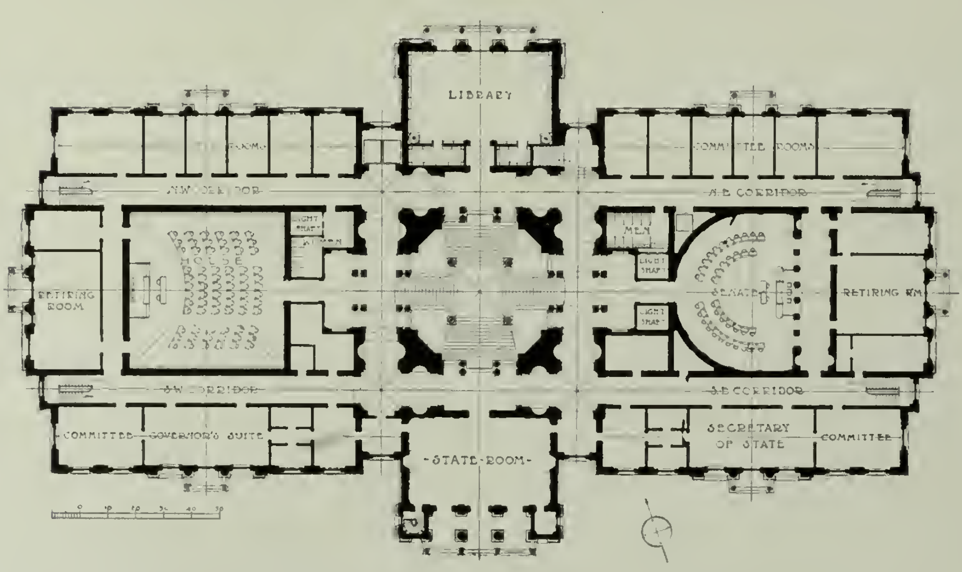
tained less than ten words, but the session lasted nearly an hour, the time being spent in changing phrases and weighing synonymous words. Nothing satisfied him which seemed to admit of improvement, and to no man were possible improvements more visible — or so multitudinous.

The same care that was expended on the drawings was exercised in all his processes in the art of architecture. The full sized plaster models underwent similar changes, both in the modeller's shop and at the building, and even the actual work in stone and other materials would be subject to alterations, for with him the finished product was the sole thing considered. While he admired beautiful drawings, he regarded them as of secondary importance.

The difference between the first studies and the final drawings of his designs was very great. In most cases the finished design bore no relation in appearance to the original sketches, a natural consequence of the great range of ideas characteristic of Mr. McKim during the prosecution of his work and strongly significant of his freedom in the choice of those actually employed. He insisted on having his designs kept in a plastic state far beyond the point at which others would have regarded them as finished, and even after buildings were well on in construction he would change dimensions and details, to the despair of those erecting them. But here again his qualities of buoyancy and enthusiasm would tide over situations in which all but he himself would seem stranded. At the crises of these situations there would appear in him a tenacity of purpose which nothing could weaken.

This quality can be best illustrated by incident at the World's Fair in Chicago. During the last days of the construction, when overworked men were still furiously working and when the last too small appropriations were apportioned, Mr. McKim decided that his building, the Agricultural Building, then practically completed, would be improved in design by the addition of an attic story.

A meeting was called, one hot afternoon, composed of the powers that were, and a drawing showing the proposed improvement was presented by him with an enthusiastic argument for its adoption. All those present admitted the improvement, but they were positive that no money was available for its execution. Mr. McKim ignored the lack of funds and grew so buoyant over their approval that in spite of interrupting statements that the money was not to be had, he enlarged his argument. All of those men, ten or twelve in number, could not convince him that his purpose was unattainable.



SECOND FLOOR PLAN, RHODE ISLAND STATE CAPITOL.

Mr. Burnham, as Chief of Construction, was presiding, and the writer remembers that towards the close of the session, which lasted two or three hours, he reiterated, in a tone of finality,—"Charles, we have no money." Whereupon Mr. McKim again renewed his appeal and with such increased vigor, that the Council lost their heads to their hearts. They decided to find some way to provide funds for the addition — and the attic story was built.

It is evident that this demanded a great deal of energy on the part of all concerned, but certainly it demanded the most from him, and even in his later years, though impairment of physical stamina became apparent, his interest in his work continued undiminished and he used the same ardent, persuasive method.

Mr. McKim constitutionally took on some occasions the longest way to reach the goal and this sometimes misled others as to his motives. He was seldom direct in speech or action, but he always had but one end in view and that was — to give the best possible results. This unquestionably cost him

INTERIOR VIEWS, RHODE ISLAND STATE CAPITOL.

SENATE CHAMBER.

HOUSE OF REPRESENTATIVES. RHODE ISLAND STATE CAPITOL.

time and money — but time and money were nothing to him. His eyes were constantly fixed on the best efforts of his hand and brain, and the long and tedious method of arriving at results was amply justified by what he attained.

Though he was well acquainted with the work done in the past, both in ancient and modern times,

SKETCH BY MR. McKIM FOR BELLEVUE HOSPITAL.

and consulted constantly, during the progress of his designing, the drawings and documents with which his library was well supplied, he was no slave to precedent. On the contrary he was a most discriminating judge of the possibility of using solutions of problems in the past to the advantage of the buildings in his care. Each of his buildings is stamped with his own individuality and on first sight is instantly recognized as his work by anyone familiar with architecture.

While his foremost characteristic was buoyancy of spirit, his largest quality was an uncompromising love of the beautiful and a corresponding hatred of ugliness.

His patience was always apparent. Though many circumstances occurred that would have been disastrous to the poise of an ordinary mind, the writer never heard him utter an impatient word or saw him lose his accustomed cheerfulness.

THE WOLFE HOUSE,
NEWPORT, R. I.

A specimen of Mr. McKim's earlier draughtsmanship.

The Influence of McKim.

BY C. HOWARD WALKER.

THE work of an architect is not only of interest from the quality of his genius as an artist, and from his ability to create, but also from his mental attitude towards the architecture of the past and his appreciation of the solutions of problems which have already occurred. The recognition of the eminent achievements which have appeared in every stage of the art, and which by the tests of time and of use have justified the universal praise which they have received, carries with it the acknowledgment that it is probable that some of the present problems in architecture are not as novel as they at first appear to be, — and have probably already been analyzed and solved and the differences between the work of to-day and that of the past do not require exaggeration.

It is evident, on consideration, that all architecture has been to an extent "*raisonne*" and that in many cases it has been so admirably reasoned out that the best fundamental solution has been found. Regard for this fact always carries with it the appearance of imitation and at times of plagiarism, when as a matter of fact it is knowledge.

While the first work of the firm of McKim, Mead and White was experimental and in many respects novel, as time went on a serious study of the past supplemented the enthusiasms of these young architects, and it is especially in the recognition of the completed attainments of the great architects of the past that Mr. McKim showed a discriminative knowledge, and at times a regard and veneration which tended

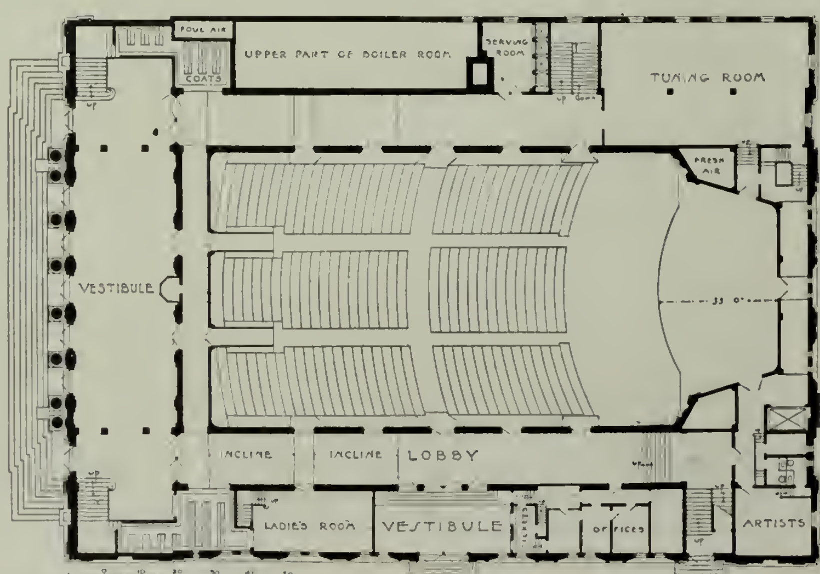
GATEWAY AT HARVARD UNIVERSITY.

SYMPHONY HALL,
BOSTON, MASS.

MANTEL IN DINING HALL,
WHITE HOUSE, WASHINGTON.

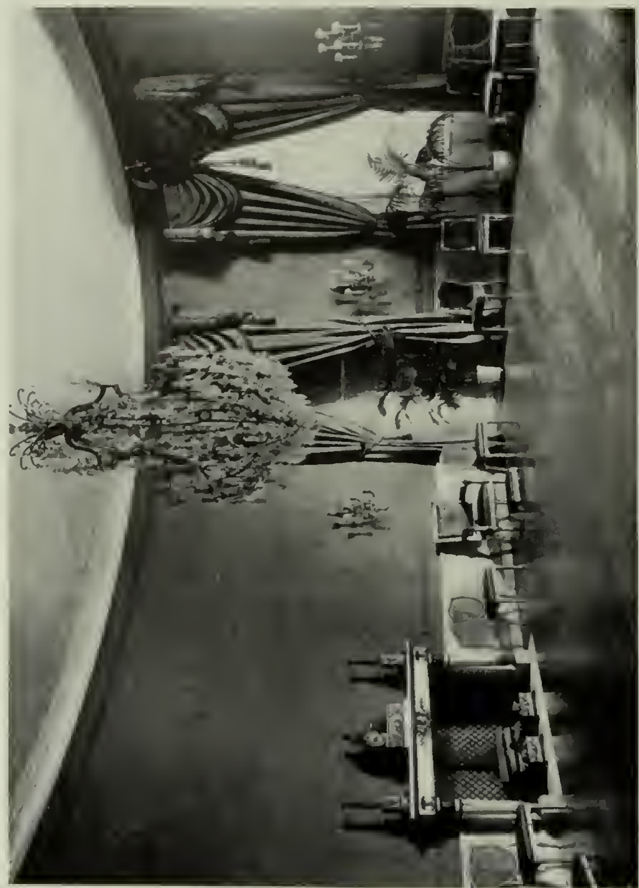
to greatly dignify his work. He was a serious student of classic architecture at its best. He esteemed it so much and considered it to have been the result of such wise thought that he refrained from disturbing it, and from adding extraneous factors to it. His attitude was one of a respect and affection which made eccentricities unworthy of his subject. And in this attitude he was supported by his partners who had the same point of view. Mr. White with his exuberant fancies in decorative work persistently held to simple masses upon which that work was expanded. His orchestration was elaborate but his themes were elemental. Mr. Mead has exercised and still exercises a critical faculty and an appreciation of the best that architecture represents, which has made it difficult for eccentric design, however fascinating, to appear in the accomplished work. And this influence is perpetuated in the admirable work of Mr. Kendall, while the younger men of the firm who have grown up under this influence have so thoroughly absorbed the spirit of the original firm that it has become to them a tradition which must assure in their future work a continuance of the spirit of the past. A wise appreciation of the qualities of the great architecture of the past is an admirable foundation for good architecture in the present.

Amidst the natural desire for individual expression, for dealing with what at first glance appear to be new conditions, because of the use of new materials with new forms and combinations of forms; amidst the erratic results which occur from imagination out-speeding restraining thought, the firm, individually and collectively, have held true to the fundamental facts of good architecture and have exercised a judicious restraint in the expression of their art which cannot be too highly praised. And they have always insisted upon the full development of their theme, have given great care to detail and to ornament, and have made it adequate without being over-



PLAN OF SYMPHONY HALL,
BOSTON, MASS.

DINING HALL,
WHITE HOUSE, WASHINGTON.



INTERIOR VIEWS, WHITE HOUSE,
WASHINGTON.

done — and *soigne* in the best sense. The relations of mouldings, their proportions and refinements, have been thoroughly considered, and there has been no dependence upon a good *parti pris* indifferently carried out. The traditions of careful work, serious and restrained attack, freedom from erratic expression, which have become integral with their work, are self-perpetuating. Men who have once recognized that genius can well be tempered with restraint, respect, and even with veneration, will not find any other attitude of mind seductive, — and the appeal of vivacious experiment will not attract.


EAST COLONNADE OF WHITE HOUSE.

At the present time in the art of the world when there daily appear new cults, it is peculiarly gratifying to find a group of men who are not overwhelmed by a fashion nor are numbed by a convention, but who thoroughly appreciate when any type of art has reached its apogee, and decline to treat it as if it were in an embryonic stage, and who have by careful study, learned the very spirit of the styles in which they have worked — and possessing knowledge of their art have expressed it naturally in the terms of that knowledge.

It is because of this clear and serene highmindedness of Mr. McKim's work that it stands forth distinguished, and when to this is added the skill of his associates and the quiet, sane appreciation of Mr. Mead, there exists an influence for which the profession of Architecture in America is to be sincerely congratulated.


EAST FACADE OF WHITE HOUSE.

DINING ROOM, HARVARD CLUB.

A Tribute.

BY ROBERT S. PEABODY.

IT DOES not seem so very long ago that there came into our little circle of architectural students in Paris a charming youth, fresh from Cambridge, from the Scientific School and the ball field — a merry, cheerful friend — an athlete — a serious student. We lived a simple, frugal life in the splendid Paris of Louis Napoleon, working hard, and he especially with a dogged earnestness. There were, however, happy interludes in this working life between *charrettes*. When on rare occasions ice formed on the lakes in the Bois, he, a perfect skater, was the center of admiring throngs. When in the Luxembourg gardens beneath our windows we passed around an American baseball the Parisians lined up three deep at the tennis courts to see him throw the ball to incredible heights. Fired by his enthusiasm we even joined gymnasium classes, and, though that now seems improbable, we became proficient on the flying trapeze. In summer we rode on the Seine and in the ever-to-be-remembered trip for several days down that river no one, French or American, joined with greater enthusiasm than the comrade we used to call affectionately Follen, or the Frenchmen by some unrecognizable perversion of the name so hard for French lips — McKim.

HARVARD CLUB,
NEW YORK CITY.

In view of his later career it doubtless sounds strange to say that for a long time it was harder for McKim than for most foreigners to find himself in sympathy with the atelier and the Ecole des Beaux Arts. What little experience he brought with him had been obtained with Mr. Russell Sturgis in New York. That master and Mr. Babb were his ultimate arbiters. Ruskin was the prophet of all that was good and true in art. Plunged into a world that did not know these masters even by name and that looked on Victorian Gothic as romantic archeology, but in no possible sense as architecture, McKim's inflexible nature had some hard rebuffs and conflicts. It required time and other influences to bring him to a sense of the great worth of the underlying principles of the Parisian training, but his sympathies were always more with the earlier than the later French masters. He never really liked modern French taste and he was in fact more close to Rome than to Paris.

The active and feverish artistic life that is creating a Renaissance of art in New York to-day often makes us think of the brilliant periods of that other Renaissance in Tuscany. I would not claim for McKim the character of universal genius which history attributes to many of the early sons of the

Italian Renaissance; but when we read how Alberti, that forerunner of Leonardo, was skilled in arms and horsemanship and all bodily exercises proper to the estate of a young nobleman — that he enjoyed feats of strength and skill — that he possessed a singularly sweet temper and graceful conversation — that for music he had genius of the highest order — we are reminded of our friend. Still more, when we find this accomplished son of the Renaissance fusing classic art with the medieval standards of taste and introducing Roman arches and Corinthian pilasters to a world that had long forgotten them, we are again brought back to New York. These two artists were alike even in the principles that guided their art. They did not seek an Architecture Raisonne. They were not greatly interested in logic. They sought beauty. They found it in its most perfect forms in classic art and they each applied it to the structures of their day. It is enough for most of us that their art was beautiful, and we find ourselves debating whether our friend and his associates were more charming in their earlier work, when in the Herald Building and the Century Club they dealt with the loveliness of the early Renaissance, or when the noonday splendors of the full great Roman orders appeared at Columbia College and the Pennsylvania Railroad Station and rivaled not only the Renaissance but Ancient Rome itself.

In all of these, however, we see McKim as in the case of Alberti — the handsome gentleman, the cultured scholar, making his city beautiful and adapting the beauties of classic architecture to the life of his day.

INTERIORS, UNIVERSITY CLUB.

By the dogged determination and the unfailing patience with which he clung to his convictions, coupled with his persuasive charm of manner, he had brought many loyal clients to build better than they knew or had dreamed of, and he had reached the top ranks of the profession, when that delightful company of artists, the Board of Design for the Columbian Fair was called to Chicago. At the first dinner our friend John Root (the architect whose sad death we so soon deplored) referring to the appropriations for the fair just made by the government said, "Congress has just given us the *avoir faire*. We have brought you to Chicago to furnish the *savoir faire*." McKim furnished his full share of knowledge and skill and sympathy to this enterprise and he was a great factor in creating that spirit of harmony and generous emulation which pervaded the whole enterprise and which was the foundation of its success.

These are but the slightest reminiscences of a life full of artistic activity and achievement. They are what are most prominent in my memory. I am happy in this opportunity to testify on the part of all my profession to our admiration for the character McKim displayed in constantly and persistently seeking a high artistic goal, and to the added influence that has accrued to the whole profession because of the dignity with which he endowed his own part in it. For my own personal part I am still more happy to speak of my love for this charming artist and generous gentleman.

DINING HALL, UNIVERSITY CLUB,
NEW YORK CITY.

Excerpts from Addresses Delivered at the Memorial Meeting in Honor of Mr. McKim, Held in New York November 23, 1909.

MR. GEORGE B. POST. The members of the Metropolitan Museum of Art, the National Academy of Design, the American Academy in Rome, the New York Chapter of the American Institute of Architects, the Faculty of Fine Arts of Columbia University, the American Academy of Arts and Letters, the National Institute of Arts and Letters, the Brooklyn Institute of Arts and Sciences, the McDowell Association, the Municipal Art Society, the National Sculpture Society, the National Society of Mural Painters, the Society of Beaux Arts Architects, and the Architectural League of New York, have called this meeting in honor of the late Charles Follen McKim. Were it not that I am to have the honor of introducing distinguished orators, far better qualified than I to speak of his character and career, I might well tell you how, by distinguished ability, great attainments, sterling worth, singular and insistent devotion to whatever he undertook, enthusiasm for the good and beautiful and hatred of sham, combined with a courteous consideration for all, he has won the devoted affection of his fellows and a dominating influence in the profession which he loved. He won the respectful admiration of the community; his genius has stamped an imprint on the art of a continent. His life-work was not without public recognition. He was a Master of Arts of Bowdoin, and Harvard University, Doctor of Letters of Columbia University, Doctor of Laws of the Pennsylvania University, National Academician, Member of the Academy di San Lucca of Rome, twice President of the American Institute of Architects, and Honorary Member of the Royal Institute of British Architects, whose golden medal he has received.


LIBRARY, UNIVERSITY CLUB.

HON. JOSEPH H. CHOATE. We have assembled in this wonderful hall to-day, at the combined invitation of all the organizations for the promotion of art in New York, to pay a tribute of respect and affection to a great artist, a noble gentleman, a self-sacrificing and public-spirited citizen, and the recognized leader for many years of a powerful and brilliant profession. I deem it a signal privilege

and honor, as a lifelong friend of Mr. McKim, to have been asked by this great body of his professional colleagues and disciples to address this interested and sympathetic company of his admirers. Interested and sympathetic I know you must all be, for it was impossible to come into contact with Mr. McKim without loving and honoring him, or to be even the most casual observer of his work without some appreciation and admiration of that.

We have all known him in the zenith of his fame — long recognized at home and abroad as the foremost of American architects — creating in rapid succession building after building, public and private, of singular dignity, simplicity, and beauty; surrounded by all the signs of affluence and luxury, consulted as the leading authority on all matters of taste and art, with all sorts of honors and distinctions heaped upon him, and yet always as simple as a child, as modest and gentle as a woman — shunning publicity and shocked at all ostentation.

It would be interesting to know from what beginnings all this greatness, this gentleness, this instinct for beauty, came. Some day I hope his life will be written by some competent hand. Recently there were placed in my hands some letters of his to his father, written in his twentieth year — probably before any person present here to-day had any knowledge of him — which seemed to me to shed much light on the formation of his manly and beautiful character.

We know something of the father and the mother, too — a sturdy abolitionist and a famous Quaker beauty. It was from her, no doubt, that he got his striking grace and delicacy of feature. They were both as brave and fearless as they were plain and simple in life and manner. To show their faith by

FIVE VIEWS OF THE MORGAN HOUSE AND GARDENS, WESTBURY, L. I.

their works, they accompanied the widow of John Brown to Virginia to bring home his mangled body, which was to lie moldering in the ground while his soul went marching on.

The letters are from Cambridge in the summer and fall of 1866, where the boy was searching in vain in the vacation for a teacher to coach him in chemistry and mathematics to enable him to enter the Lawrence Scientific School in the Mining Department. Mining engineering was what he was bent upon, with no more idea of becoming an architect than of studying divinity.

The Quaker discipline and spirit is stamped upon every line of his letters. They are addressed to "Dear Home," and they reveal on every page the simplicity, the earnestness, the narrow means and self-denial of that home and of the writer. Simplicity, quietness, self-restraint — were not these his guiding motives all through life? Are they not the very things that the name of McKim, Mead & White stands for still? Truly the boy was father of the man. He uses the Quaker style and vernacular: "Father, does thee think I had better come home to Thanksgiving, or will it be spending too much? I can wait till January if thee thinks it best," but "Do send mother to see me" is his constant refrain. "Dear mother, thee must come!" His prevailing thought seems to have been how best to ease the burden of his education on the lightly furnished family purse. What he seems to have intended was one year in the Scientific School and then two years in Paris — not at all at the Beaux Arts, but in the School of Mines, where the education for his life's calling would be cheaper and better. The spur of necessity was the goad to his ambition, as it always has been to most Americans who succeed. Evidently he had no love for mathematics or mining, but he could toil terribly even at that. What it was that in one short year at Cambridge roused in his soul the dormant love of art and passion for beauty we cannot tell. But kindled they were, and at the end of the year he went straight to Paris and to the Beaux Arts

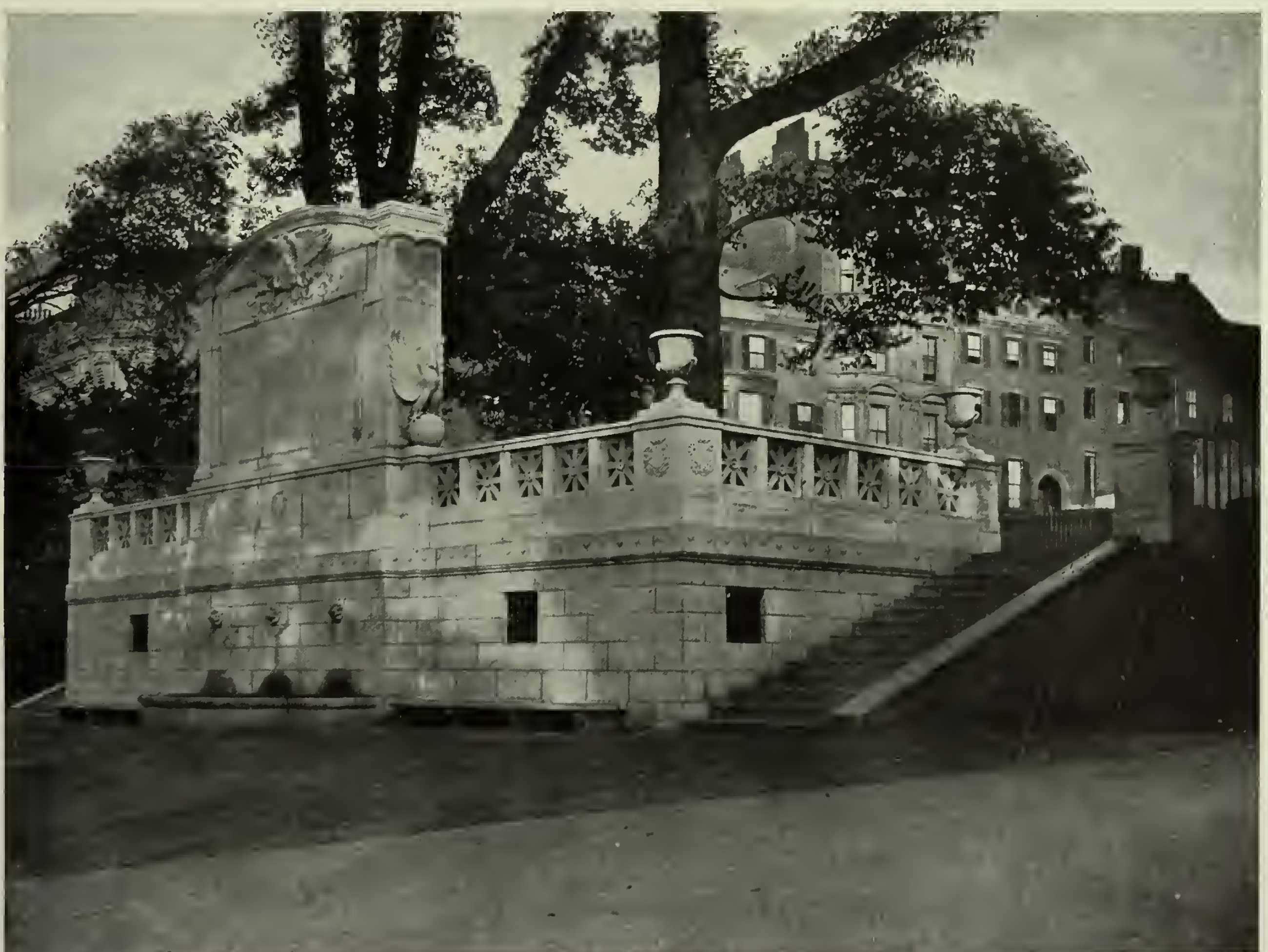
SHAW MEMORIAL,
BOSTON, MASS.

to study architecture and then to travel as long as he could and feast his soul on all the wonderful and beautiful buildings which abound in France and Italy. And at last he comes home, fully equipped for the arduous and fascinating labors that were to fill and crown the thirty years of his successful and brilliant career. In architecture, as in every other profession, opportunity counts for much, and he found a golden opportunity awaiting him.

. . . Perhaps this is hardly the occasion to dwell upon the innate traits and qualities that made him so dear and precious to his friends, and his loss so deeply and widely lamented. But in truth he was one of the most charming personalities that America has ever known. Wherever he came, he always brought light and warmth and sympathy, which seemed to flow from him whether he spoke or kept silent. It was impossible to know him and not to love him, and, to borrow the language of St. Paul, it may truly be said of him :

" Whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report ; if there be any virtue and if there be any praise, we think of these things " as all embodied and transfigured in the life and character of Charles Follen McKim.

HON. ELIHU ROOT. . . . As some men have the vision of their country rich and prosperous, and some men the vision of their country great and powerful, his imagination kept always before him the vision of a country inspired and elevated by a purer and nobler taste ; and unselfishly, with enthusiasm, with persistency and high and noble courage, he devoted himself to that work. The sensitive quality of his nature, which made him shrink from conflict, from all the harsh contacts of life, made the



PARK VIEW OF SHAW MEMORIAL.

prosecution of this work by him courageous beyond the ordinary capacity for conception. That gentle, diffident, and hesitating manner seemed always to be yielding to opposition and before assault, but always, though he swayed to and fro, always he stood in the same place, immovable. However much he suffered — and he did suffer; however hard it was, he never could surrender what he believed to be right in art. He never could surrender. It was impossible for his nature to yield in what he believed to be best for the future of art.

Gentle and heroic soul, happy country which has the character to recognize such a man, which has the fiber into which can be woven such a thread! Fortunate are we to have known him and to have called him our friend.

MR. WALTER COOK. On Sir Christopher Wren's tomb in St. Paul's there is a Latin inscription which says, "If you seek his monument, look about you," and we may well repeat these words when we think about Charles McKim. It is useless to enumerate all the buildings, in this city and elsewhere, which bear witness to his talent, his almost unerring taste, and his loving care. And it is one of the rewards which his and my profession offers, that when we are gone, our monuments, whether they be great and imposing structures or not, stand in the great open-air museum of city or country, to be seen by all men, and are not shut up in galleries. "If you seek his monument, look about you."

All this production of a most active career he has left as a heritage to his country; but more especially is it the heritage of the architects who follow him. To them it is a very precious one; for with these examples before us, we cannot fail to approach our work with something of the love and devotion to the beautiful which he possessed in so high a degree. . . . In all the arts, and especially in the

WAR COLLEGE,
WASHINGTON, D. C.

PENNSYLVANIA RAILWAY STATION,
NEW YORK CITY.

PENNSYLVANIA RAILWAY STATION.

arts of the present time, there is such a striving for the individual note, for a different mode of expression than any one else has used — a different language I might say — that this desire threatens sometimes to destroy all other impulses. Let us at least be *different*, is the cry, even though we may not be beautiful.

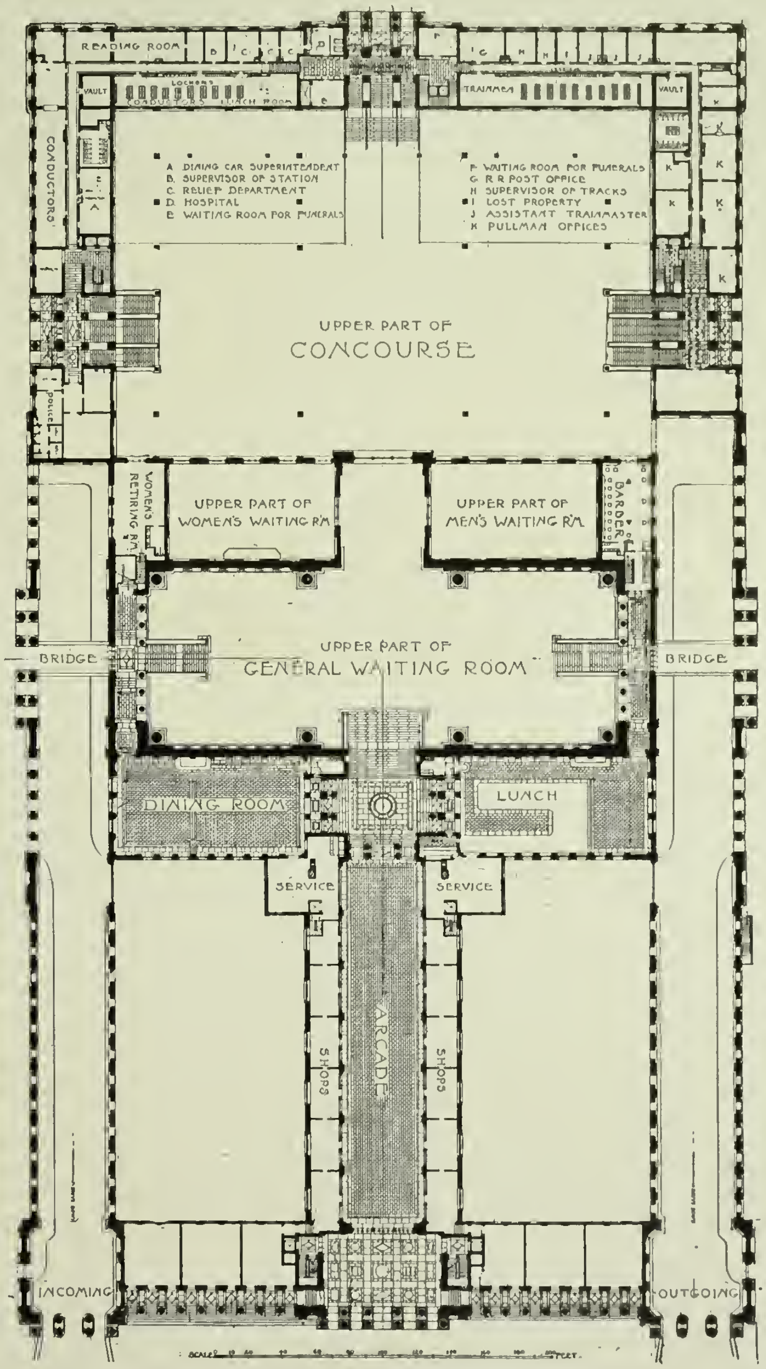
Architecture, in common with the other arts, has suffered from this malady. But we in this country have not been the worst offenders; and that we have not been so, I think is due more to the influence of McKim than to any other one cause.

. . . He, too, sought as earnestly as the rest of us for individuality; and when I think how easy it is to recognize his hand, I cannot but think that he attained it. But above all was his unwritten law — never, in the name of originality or with an ambition to be hailed as the daring innovator, to create anything which did not primarily appeal to him as beautiful.

From this he never swerved an instant. And I believe that this loyalty to a pure and unselfish ideal will live as an example, as a good tradition among us long after his generation has disappeared; and that McKim dead will preserve us from as many monstrous and grotesque creations as McKim living did.

PRESIDENT NICHOLAS MURRAY BUTLER. . . . We like to think of him as a member of the great tradition, the one great tradition that has shaped the intellectual life and the esthetic aspiration of the Western world; the great tradition which, despite all changing, fitful tempers, all alterations of scene and passings of time, remains the one pure well of art and literature undefiled, the tradition which bears the name of Greece.

PROFESSOR WM. M. SLOANE. . . . Fourteen associations, artistic, technical, and literary, here unite to commemorate the distinction of Charles Follen McKim as a citizen, as a craftsman, and as an artist. To this end they join in recording these convictions.



PLAN AT STREET LEVEL, PENNSYLVANIA RAILWAY STATION, NEW YORK CITY.

. . . His genius was exhibited in his supreme power of collaboration; he linked his work and fame inseparably with those of his two original partners, primarily for the sake of comprehensive mastery, but thus incidentally for the perfecting of achievement by each singly as well as by all in combination.

. . . His work, like that of all true artists, was the expression of his manhood. His character was strong as it was pure; his disposition affectionate and self-sacrificing; his mind vigorous, helpful, and noble. He was a lover of his kind, discerning reality behind the ideals of his fellow-Americans, intolerant only of pose and sham. Because of his strong and courageous heart he was genial but modest; joyous, even gay, and gentle.

The Public Bath and Gymnasium Building Competition.

AWARD OF PRIZES.

THE Jury for the Public Bath and Gymnasium Building Competition, which was the problem for the last annual Terra Cotta Competition conducted by THE BRICKBUILDER, awarded First Prize ($500) to Franklin M. Chace and Walter W. Cook, associated, Boston; Second Prize ($200) to A. E. Hoyle and H. T. Carswell, associated, Boston; Third Prize ($100) to Charles Romer, Brooklyn, N. Y.; First Mention to H. G. Quigley, Cambridge, Mass.; Second Mention to Steward Wagner, New York City; Third Mention to Thomas Herman, New York City; Fourth Mention to O. R. Eggers, New York City; Fifth Mention to Benjamin Courtland Flournoy, Washington, D. C.; Sixth Mention to Clifford Evans, Birmingham, Ala.

The competition was judged in Chicago, January 24th, by Messrs. Irving K. Pond, President of the American Institute of Architects, Chairman; Alfred Hoyt Granger, Dwight Heald Perkins, Howard Van D. Shaw, and Robert C. Spencer, Jr.

IN GENERAL.

Howell & Thomas, architects, Columbus, Ohio, have removed their offices to 151 East Broad street, Columbus.

C. Howard Crane, architect, Detroit, announces his withdrawal from the firm of Watt & Crane, and the opening of offices in the Ford Building, Detroit.

James E. Maher, architect, has opened offices in the Maryland Savings Bank Building, Baltimore. Manufacturers' catalogues and samples desired.

Edward C. Smith, architect, has opened an office at 42 Market street, Poughkeepsie, N. Y. Manufacturers' catalogues and samples desired.

Edward Crosby Doughty, architect, formerly of New York City, has been admitted to the firm of John Scott & Co., architects, Ford Building, Detroit.

The first annual exhibition of the Los Angeles Architectural Club was in all respects a great success, it having been attended by more than 24,000 people. On January 23d a dinner was given by the club to the patrons of the exhibition, at which Mr. A. F. Rosenheim, President of the Los Angeles Club and of the Architectural Club of the Pacific Coast, was toastmaster. That upwards of 24,000 people will attend an architectural exhibition is in itself a tribute to the energies of the managers and to that *esprit de corps* which is manifesting itself among architects all along the Pacific Coast. The officers of the American Institute of Architects would do well to take heed of this spirit and plan to hold its next annual convention in one of the Pacific Coast cities. The architects of Los Angeles have filed their claim for first consideration.

On February 16th the newly formed New Jersey Architectural Club opened its quarters at 847 Broad street, Newark. The idea of forming a club in Newark for architectural draftsmen and others in the allied arts was originated by the New Jersey Chapter of the American Institute of Architects. On January 19th, in response to an invitation, some twenty-five draftsmen met members of the chapter at a smoker, when the subject was discussed and the chapter's offer to arrange for quarters and back a club was accepted. A club was formed, temporary officers elected, and a committee of organization appointed. The club has been organized along similar lines to those of the architectural clubs of Boston, Chicago, Pittsburg, and Washington, and the T-Square Club of Philadelphia. The main object is study, and to encourage self-advancement among members in the profession.

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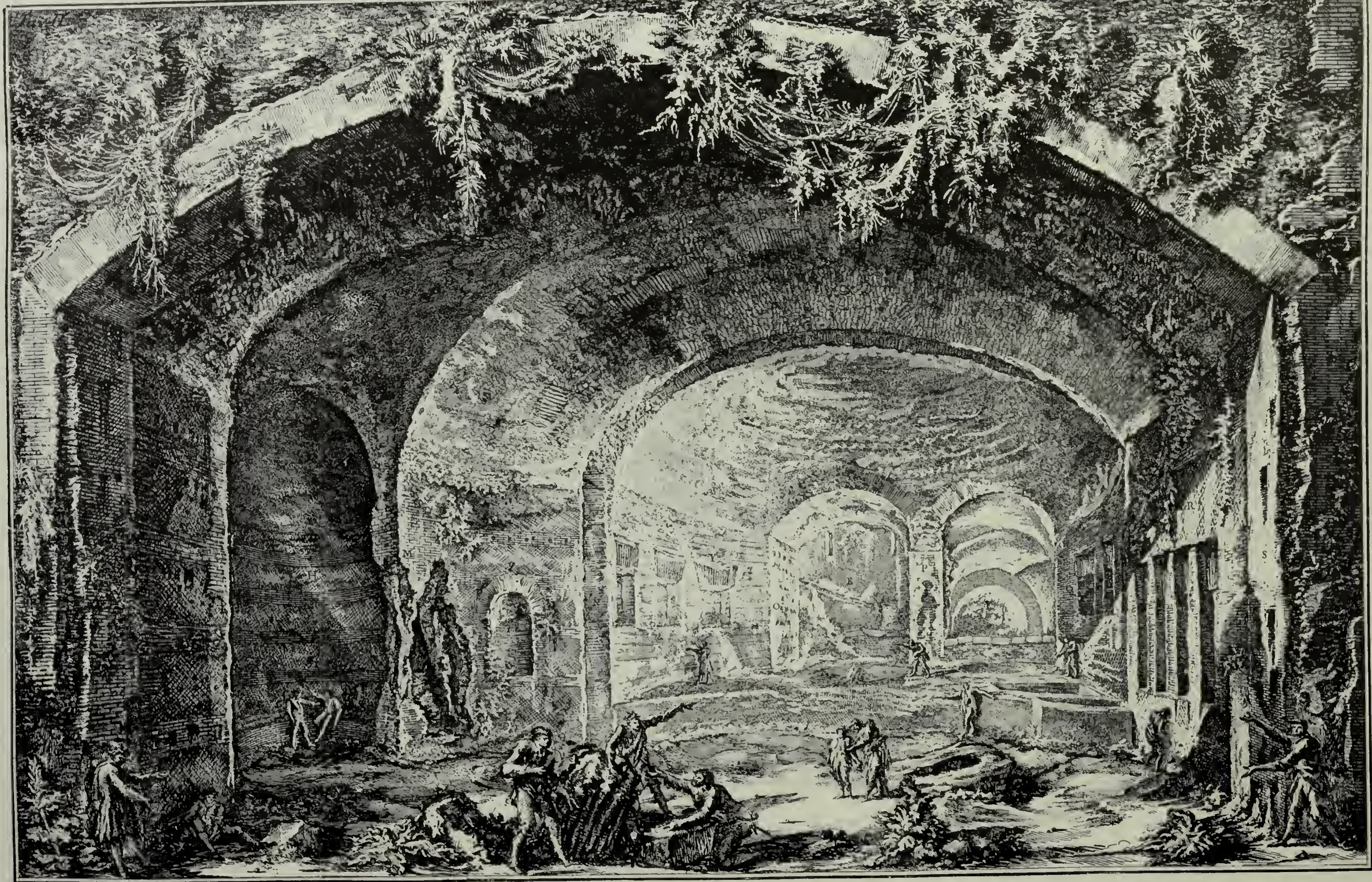

BRICK FACED GROTTO NEAR THE OUTLET OR "EMISSARIUM" OF LAKE ALBANO IN THE ALBAN HILLS.

GIOVANNI BATTISTA PIRANESI, DEL.

The lake of Albano partly fills the crater of an extinct volcano. An artificial outlet or "Emissarium," dating from Roman times, pierces one side of the crater. Piranesi's engraving shows a large grotto which is near the water's edge, a short distance to the north of the outlet. It goes by various local names but probably belonged to the Emperor Domitian's great villa and palace, and was used as a cool summer retreat. Other engravings by Piranesi give the plan and details of the ornament and brickwork of the grotto.

THE BRICKBUILDER

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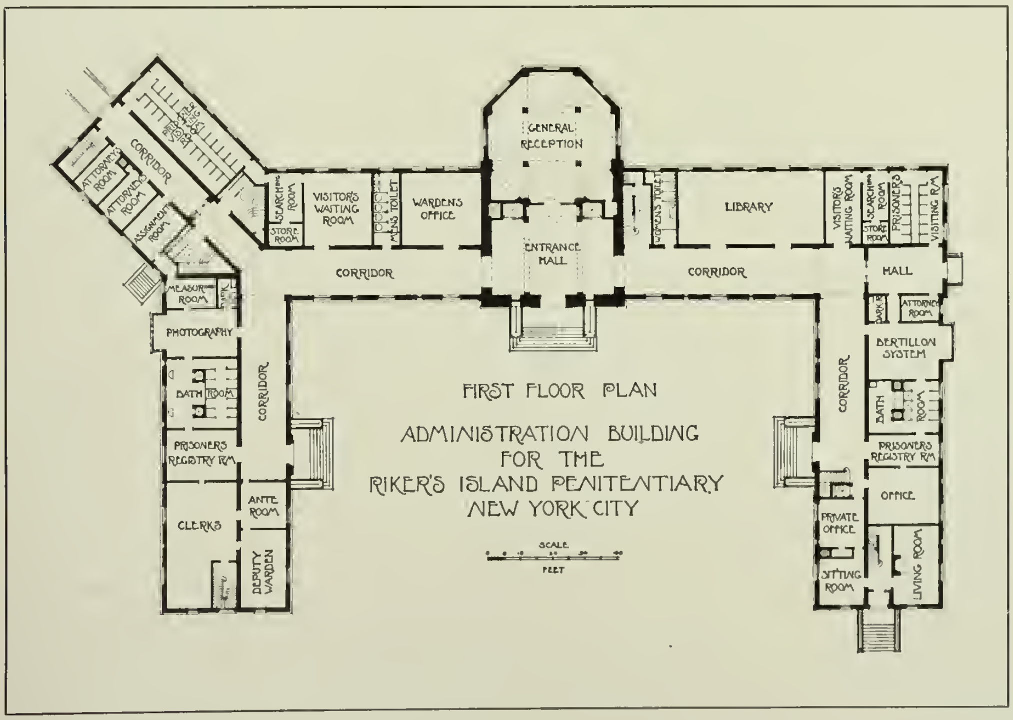
The Planning of a Prison or Penitentiary.

BY FREDERICK G. FROST.

A PENITENTIARY or prison is perhaps one of the most unusual types of plans to design as there are few examples from which to draw any precedent. European examples are not applicable to this country for their method of confinement is somewhat different from ours. In Europe the prisoners are usually kept in solitary confinement, and when sentenced to labor the work is performed in their own cells. For exercise the men are taken out singly into a small yard. These yards are so arranged that there can be no communication between the prisoners, and one guard stationed at a central point surveys them all. The cells, being used for work as well as dormitories, are large and arranged along the outside walls with the corridor in the center.

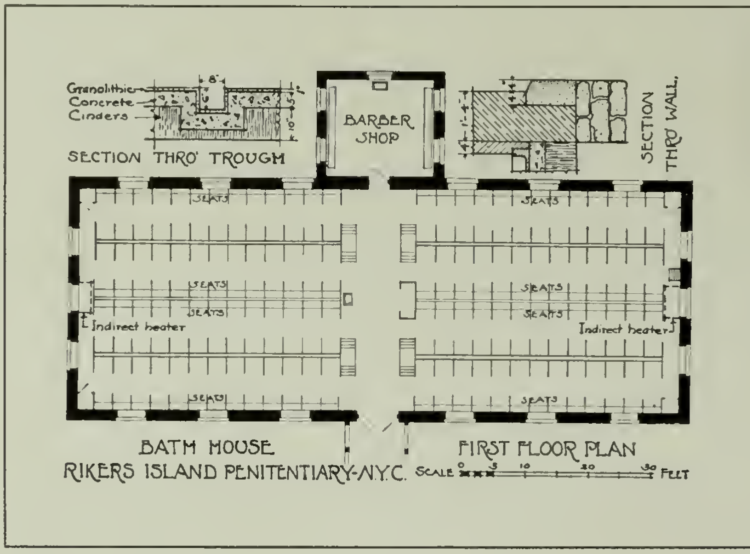


The method of confinement in this country consists in furnishing the prisoners with a cell for sleeping purposes only, while during the day they work collectively in the shops, and are not allowed to communicate one with another. Nevertheless, in spite of the great difference of opinion as to the methods of confinement, all authorities agree upon the general principle that health and discipline are the prime requirements for the proper confinement of criminals.

The health of the prisoner requires that he be given an abundance of sunlight, fresh air, exercise, and good wholesome food. Discipline to be effective must be maintained through a system of direct and concentrated supervision, with undivided responsibility, combined with rigid and careful classification to prevent moral contagion.

Taking these points as a basis for planning a penitentiary, the first and most important thought is to find the best arrangement for the cell houses or sleeping quarters. The accompanying illustration of the cross section of such a building will explain itself. It shows the arrangement of the cells with the utility corridor between, through which run all plumbing pipes, lighting arrangements, and ventilation for the cells. The prisoners' corridors surround the cells, and outside of the prisoners' corridor is the guards' corridor. This arrangement, with slight modifications, is conceded by most authorities to be the best for the cell houses.

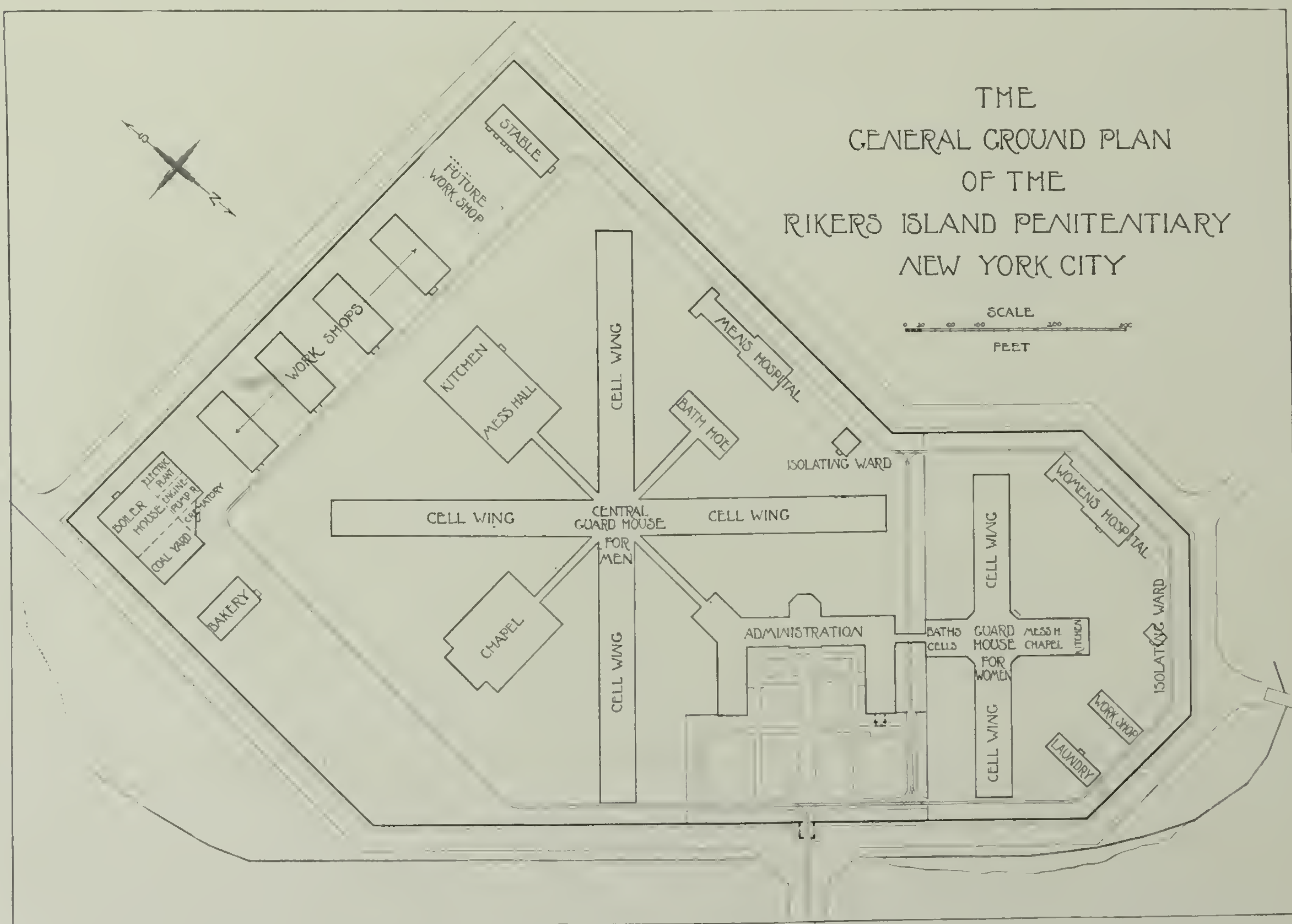
The problem then arises as to how many prisoners such a cell house can accommodate without impairing the health, supervision, and classification. The authorities are somewhat divided on the subject, but by carefully considering all sides it seems inadvisable to have more than four stories of cells, and not more than five hundred in a wing. Such an arrangement gives sixty-two or sixty-three cells in one row, which is about the largest number of cell doors that can be operated by the modern locking devices.



Having thus determined the arrangement and capacity of a cell wing, the next thing to decide is the arrangement of several cell wings. The straight cell wing with the guardhouse in center or at one end, according to the number of cells, seems to be the most appropriate for small penitentiaries, while for large penitentiaries the best solution appears to be the stellar arrangement ; providing, however, that there shall be not more than four wings abutting on a central guardhouse. If there be more than four wings converging upon a single point then the intervening angles become less than right angles and therefore so acute as to deprive the cells nearest the intersection of the proper amount of sunlight and air.

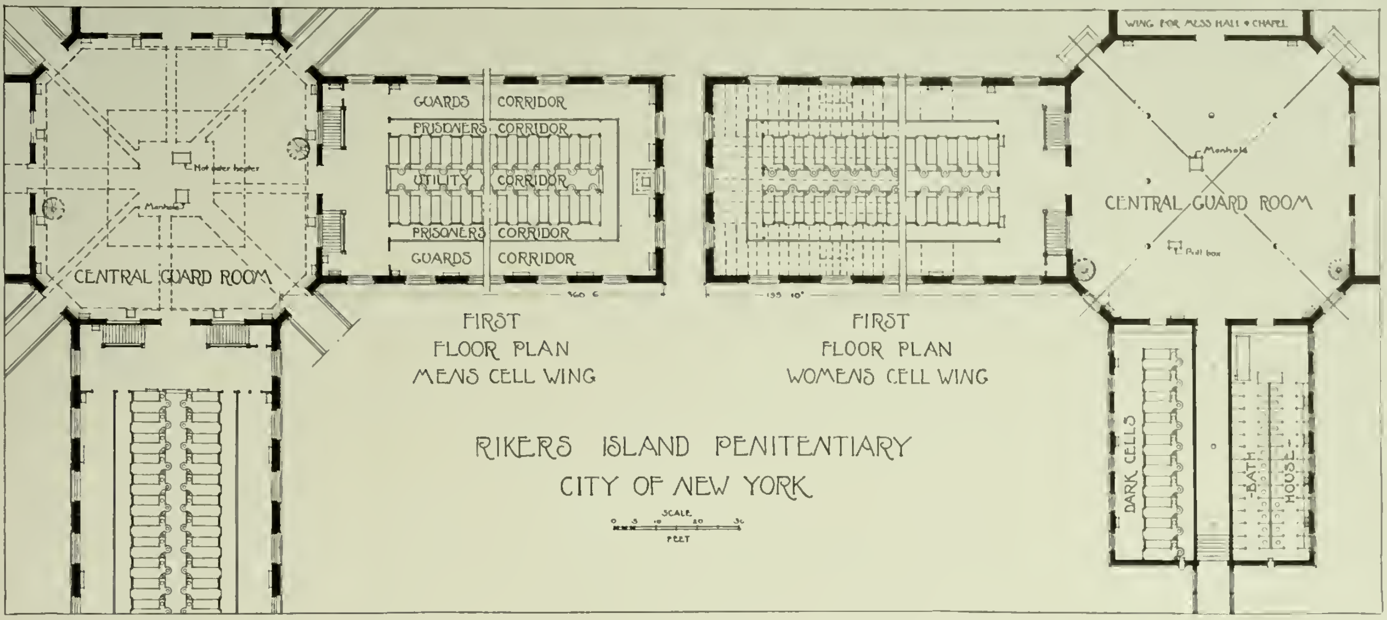
The next problem that arises is the orientation of these cell wings. In THE BRICKBUILDER Hospital Competition Special Number there was an able article on the Orientation of Hospitals; and what is true about hospital orientation is equally true of a penitentiary.

For the small penitentiary the straight cell wing should be placed north and south, while for the large penitentiary on the stellar system the wings must lie between the



GROUND PLAN, RIKERS ISLAND PENITENTIARY, NEW YORK CITY.

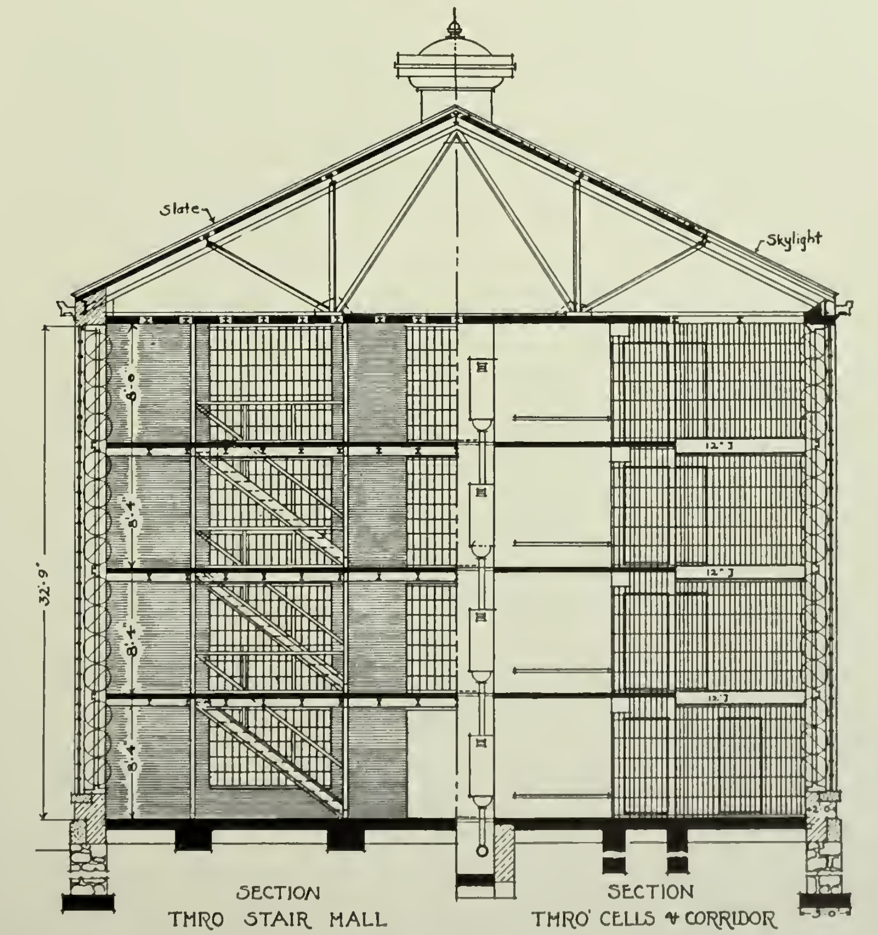
Trowbridge & Livingston, Architects.



points of the compass. By this method the maximum amount of sunlight is obtained. There should be but one entrance to each cell wing and this entrance should lead directly into the central guardhouse, where the main or central guard is stationed and where the entrance and exit of every prisoner and guard are observed and recorded. The cell wings are easily supervised from this point and any disturbance or infraction of rules on the part of the prisoners or guards is strictly reported. This guardhouse should be arranged so that the walls between the cell houses contain as much window surface as possible in order that all persons using the staircases can be seen by the central guard.

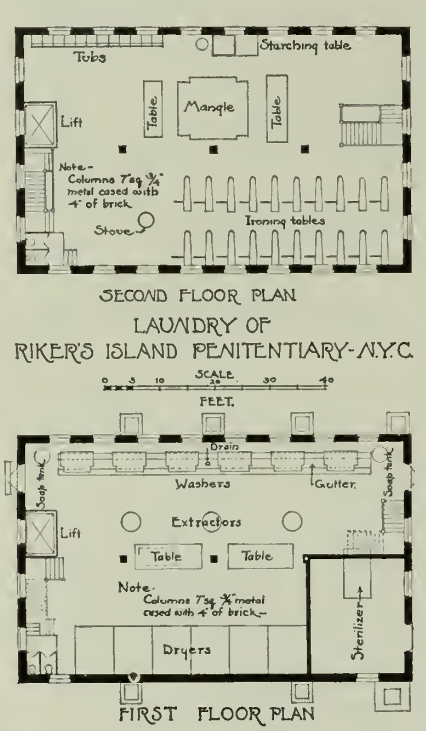
The mess hall should be located in close proximity to the central guardhouse, either attached or connected by a covered passageway. Close attention should be given this building regarding ventilation in order that the hall shall be at all times perfectly fresh and clean. The tables or benches should be arranged to give easy access for the service from the kitchen, which should be closely attached with its various storerooms, butcher shop, vegetable rooms, dairy and bakery.

Adjoining the mess hall should be located the workshops, and as the prisoners are in them the greater part of the day the necessity of proper arrangement



CELL HOUSES FOR THE RIKERS ISLAND PENITENTIARY-N.Y.C.

for light and air is very essential. Hygiene should come before economy, and these buildings would be better if planned as separate buildings. Stairways should be arranged at both ends, with a single entrance to the building. They should also be carefully planned for the different branches of industry carried on therein.



The chapel or assembly hall, where three different religious services (Protestant, Catholic, and Hebrew), lectures and entertainments are held, should be arranged, to meet the varied requirements. The bath house should be reached directly from the guardhouse, so that the gangs of prisoners may bath quickly, in order that the entire number of inmates may bathe at least twice a week without interference with the regular prison routine. To accomplish this purpose showers seem to be the most convenient form of apparatus. These showers should be so arranged that the prisoners can step from a dressing alcove to the shower at a given signal. All the showers should be controlled by the attending guards, stationed on elevated platforms, with a complete survey of every shower under their control. The necessary clean and soiled linen rooms should be located in this building.

The hospital differs little from the regular type of ward hospital. Twenty patients seems to be the greatest number a ward should accommodate. Each ward should have its linen, bath and toilet rooms. The position of the nurse in the ward should be such that a complete view of every bed may be had. An operating room with the usual recovery, instrument, etherizing rooms, etc., used for minor operations, is necessary. It is also essential that a small isolation ward be provided in a separate building to guard against the spreading of any contagious disease.

The laundry should contain only simple machinery, as the work is done entirely by the prisoners and a great deal of it by hand. A separate space should be allotted for the staff laundry in order that their clothes may not mingle with those of the prisoners. The power house should be planned in connection with the workshop and transit facilities. A storehouse for the manufactured articles should be located near the transit facilities with a trap or double-gated yard for shipping.

The administration building should provide on the ground floor rooms for the clerical force, warden, deputy wardens, and general reception, as well as accommodations for the reception of the prisoners. Inasmuch as the great majority of prisoners arrive at the institution in an unwholesome condition, a separate entrance is advisable where they can be conveniently guarded in a waiting room adjoining the office.

Each prisoner is registered and conducted directly to a bathroom, while his clothes are taken and sent to a laundry and sterilizing room, where they are marked and

BIRD'S-EYE PERSPECTIVE OF THE NEW STATE PRISON AT STILLWATER, MINN.

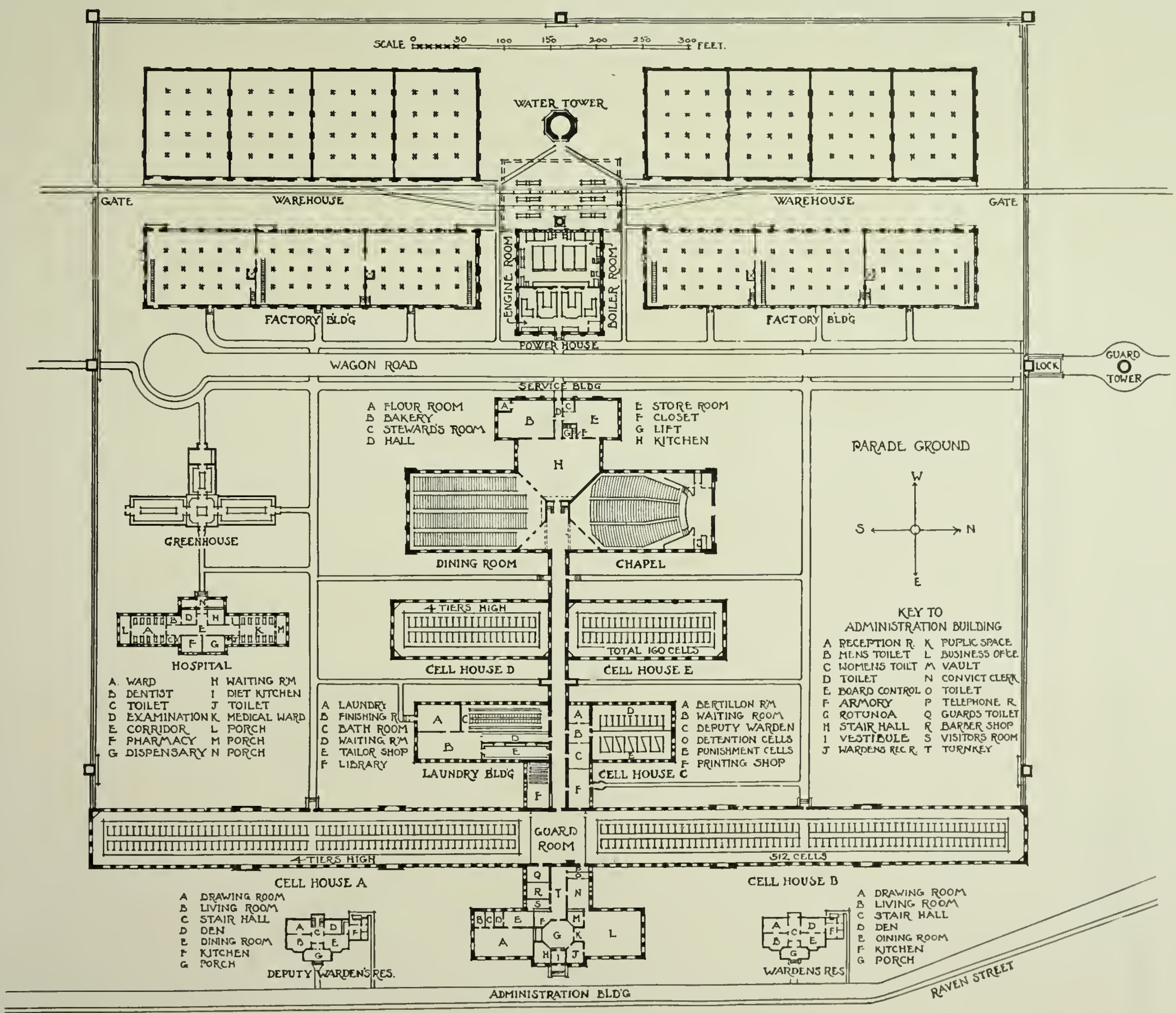
assigned to the storeroom for prisoners' clothing. In conjunction with these baths there should be a storeroom for prison uniforms, so that after the prisoner has bathed he may be taken directly to the Bertillon room to be photographed and measured. After the examination by the prison physician for the detection of contagious disease, etc., the prisoner passes to the assignment room, where he is given his number, and cell, and his duties determined.

The arrangement for the visiting of prisoners usually consists of a visitor's waiting room, and a searching room where visitors are thoroughly searched before being allowed to see the prisoner. The prisoners' visiting room should be arranged so that the prisoner and visitor may converse and yet be separated from each other to avoid the passing of articles.

In the upper floors should be located the guards' bed, dining and sitting rooms, doctors', chaplains', deputy wardens', and wardens' apartments.

The entire institution should be surrounded by a wall high enough to prevent a prisoner from scaling it and at such a distance from the buildings that the surrounding air and sunlight will not be shut out from them. There should be as few entrances through this wall as possible — only one if it can be conveniently arranged.

In general it is of primary importance to arrange all the buildings with special care as regards surveillance and orientation, avoiding all forms of courts, and as few angles as possible. The buildings as far as practicable should be connected by covered passages affording protection to prisoners in inclement weather.



GROUND PLAN, MINNESOTA STATE PRISON, STILLWATER, MINN.
C. H. Johnston, Architect.

Below is given a list of books with information regarding prisons.

Charles Richmond Henderson — Modern Prison Systems. Principal countries of Europe and each state of the United States.
Samuel J. Barrows — International Prison Commission Reports.
K. Krohne — Handbuch der Gefangnissbaukunst. Handbuch der Architectur.

L. Klasen — Grundrissvorbilder, Degaude fur Justizzweeke.
J. Gaudet — Elements et Theorie de l'Architecture.
Desportes and Lefebure — La Science Penitentiaire.
Charles A. Collin — Principles of Modern Prison Science.
Jay S. Butler — The Prisons of Great Britain.
William F. Harris — The Philosophy of Crime and Punishment.
Hamilton D. Wey — Criminal Anthropology.
Eugene Smith — New York's Prison Laws.
Prison Labor System — The Elmira Reformatory (Published by the Inmates of the Institution).
Reports of Department of Correction, New York State.

THE NEW MINNESOTA STATE PRISON BUILDINGS AT STILLWATER.

Before this work was undertaken the warden and Board of Control visited eighteen prisons in the United States for the purpose of familiarizing themselves with the very best and latest results in modern prison buildings.

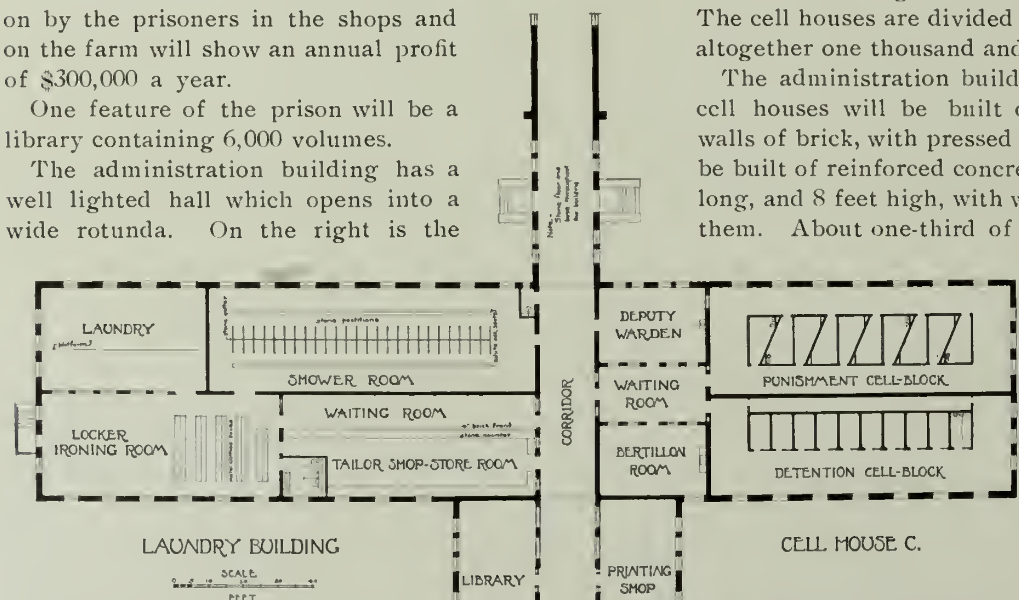
The prison proper enclosure contains twenty-two acres of land, and the prison farm one hundred and sixty acres. The buildings are plain, substantial, and comfortable, and in planning all the laws and rules for obtaining the best hygienic and sanitary conditions have been carefully followed. The buildings are also fireproof. The entire group when completed will cost $2,500,000.

It is estimated that the work carried on by the prisoners in the shops and on the farm will show an annual profit of $300,000 a year.

One feature of the prison will be a library containing 6,000 volumes.

The administration building has a well lighted hall which opens into a wide rotunda. On the right is the warden's office and an open hallway leading to the large office room, which occupies nearly one-half of this floor, where all of the business of the prison will be conducted. A little farther on the right is a large office for convict clerks, which connects with the main office. On the left of the rotunda is a reception room for the accommodation and convenience of visitors. Here also is the office of the State Board of Control, which is connected with the turnkey's office, and all other inner offices, from which the prisoners may come direct to the Board's office without coming from behind locked doors. Lavatories and water closets are planned for the accommodation of the public and the office force. The rotunda opens into the turnkey's hall, on the left of which is located the usher's office, lavatory, water closets, lounging room with lockers, for the convenience of employees; while on the right there is an office for convict clerks, a barber shop for employees, and telephone exchange. Two stairways lead up to the second and third floors of the administration building. One-half of the second floor will be occupied by employees' kitchen, and three dining halls—two for officers and employees and the third for special use. The other half of the second floor will be used for a parlor and guest rooms. The third floor will be used for employees' sleeping rooms, a female prison, the matron's bedroom, parlor, etc. The turnkey's hall opens into the large central corridor, which leads to two large cell houses containing five hundred and twelve cells each. The cell houses are divided into two sections and contain altogether one thousand and twenty-four cells.

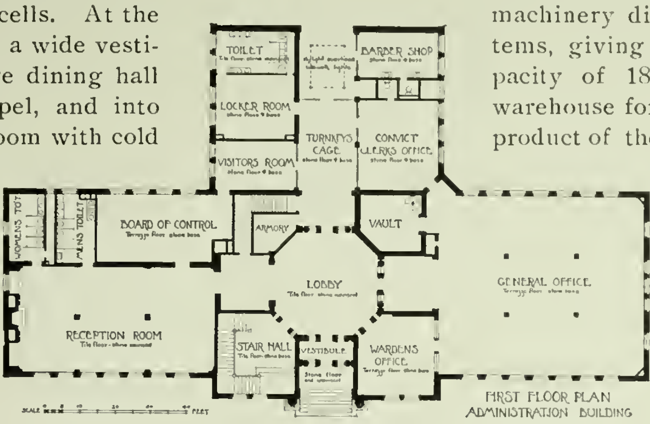
The administration building and cross section to the cell houses will be built of concrete foundations and walls of brick, with pressed brick facings. The cells will be built of reinforced concrete, in size 6 feet wide, 9 feet long, and 8 feet high, with well lighted halls surrounding them. About one-third of the outside walls of the cell houses will be taken up with windows running nearly to the roof. There will also be large skylights in the cell house roofs over the halls, so as to make them as light and airy as possible. The second and third floors over the central corridor between the two cell blocks will be used for schoolrooms and lecture halls. On the ground floor of this building, off from the central corridor, the prison library is located in the first room to the left, and on the right side of the hall opposite, the *Mirror* office and printing room.



MINNESOTA STATE PRISON.

The next building on the left contains the laundry, wash room, and the bathroom for all the prisoners, while the building on the right provides for the deputy warden's office, waiting room, office for the Bertillon and finger print operator, with necessary room for the files, ten solitary cells, and ten detention cells, all on one floor. In the rear of the laundry building and cell house C — see plan — there is space allotted for two subsidiary cell houses, which will not be built now, but are planned for future contingencies, containing three hundred and sixty cells, making the maximum capacity thirteen hundred and eighty-four cells. At the end of the central corridor is a wide vestibule which opens into the large dining hall for prisoners, the prison chapel, and into the convict kitchen, service room with cold storage, and general store in the rear of the kitchen, the latter facing the main street of the prison. All three of these buildings are one story.

To the right of the group of buildings described a plot of land containing three and one-half acres will be used for parade grounds; to the left on the opposite side of the yard the same amount of ground will be converted into a prison park, in the midst of which will be located a modern prison hospital and greenhouse. Facing the main street where teams may enter the grounds through a large, double gate on the north side, or pass out of the prison from the south gate, there is the large central power plant which is to furnish electric power for the two large industries — the manufacture of binding twine and cordage and farm machinery — which will supply work for all of the prisoners. This power plant will provide for all of the heating and ventilating of the buildings by means of the fan system. It is estimated that it will require from 1,200 to 1,600 normal horse-power. Beneath the power plant is an underground coal storage vault of 2,000 tons capacity. The large water tower, 115 feet high, contains two large water tanks, one for domestic and the other for general purposes. Here the railroad tracks and switches pass through the grounds from the north to the south entrances between the factory and warehouse buildings.



NEW STATE PRISON AT STILLWATER, MINN.

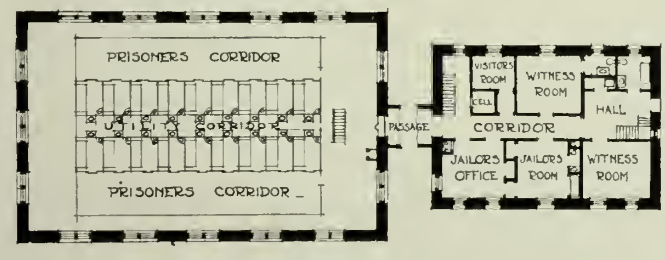
Facing north from the power plant the twine factory buildings are located. The factory building when completed will be 360 feet long, 86 feet wide, and three stories high, and will furnish ample room for five hundred spindles with necessary preparing machinery divided into four complete systems, giving an annual manufacturing capacity of 18,000,000 pounds. The large warehouse for raw material and the finished product of the twine factory is one story, 360 feet long, 120 feet wide, and 30 feet high, divided into four sections.

The factory buildings and warehouses for the farm machinery plant will be located on the south half of the prison grounds set aside for manufacturing purposes. The size and design of these buildings will not be determined until the management has had time to measure and estimate the probable manufacturing capacity required. All of the other buildings will be erected first.

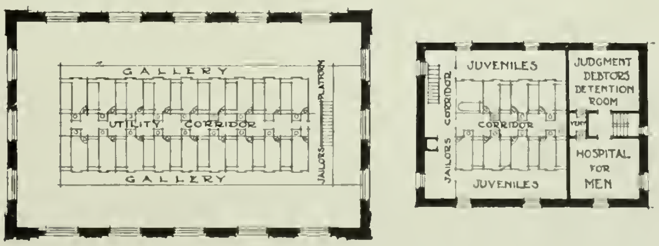
THE ULSTER COUNTY JAIL AT KINGSTON, N. Y.

The new jail stands in the rear of the famous old Ulster County Court-house, where the first governor of New York State was inaugurated, and where the constitution of the state was promulgated.

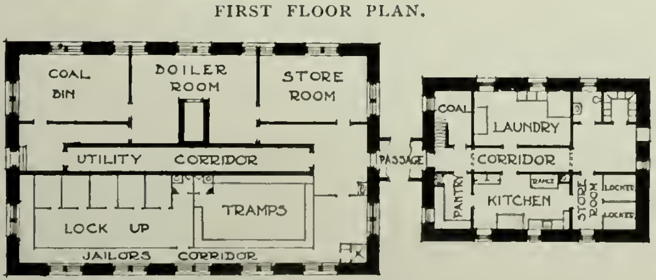
The building is an isolated structure 50 by 80 feet. In the basement are four station-house cells, one large tramp cell, shower bath, toilets, boiler rooms, etc. There is no entrance to the upper floors, except by a bridge or passageway leading from the old jail or court-house. The first floor contains sixteen steel cells, placed back to back, with a 5 foot corridor between. This corridor is closed at both ends by steel doors. In front



FIRST FLOOR PLAN.



THIRD FLOOR PLAN.



BASEMENT PLAN.

SECOND FLOOR PLAN.

ULSTER COUNTY JAIL, KINGSTON, N. Y.
Stockton B. Colt, Architect, M. S. Teller, Associated.

NEW CELL WING, STATE REFORMATORY, RAHWAY, N. J.

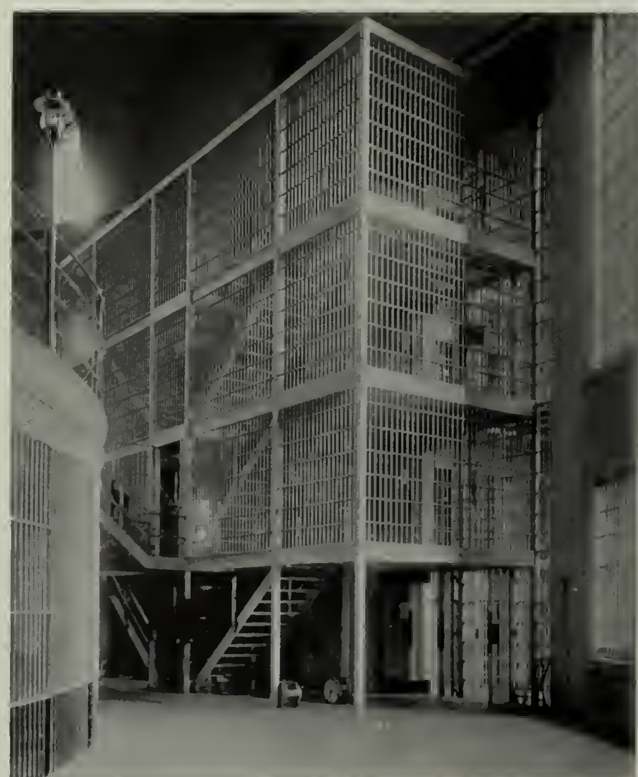
of the cells is a steel grating, reaching from floor to ceiling, which forms an exercise corridor 48 feet long and 8 feet wide, extending from the cells to within 4 feet of the windows, thus leaving a jailer's corridor entirely encircling the cells and exercise corridors, and enabling the jailer to look into each cell without mingling with the prisoners. All the cells and window guards are of tool-proof steel.

The second story is 28 feet high and contains two tiers of sixteen cells each, the upper tier being reached by a separate stairway. Here is also an exercise corridor in front of the cells. The cells are 6 by 7½ feet in dimension, and are lined throughout with ¼ inch steel plates, except the front steel bar grating. Each cell has an iron cot, hung at the side so as to fold against the wall. There is also a wash-basin and toilet, supplied with running water in a niche, which projects into a utility corridor that extends from basement to roof and contains all soil vent, water pipes, and closet bowls. The iron smoke-stack passing through the center creates a forced draft, carrying all odors out through openings in the roof, and affords ventilation for the cell, under control of the prisoner.

All cells have sliding doors, with a lever locking device worked from the jailer's corridor, which locks or unlocks any or as many doors as may be desired in each row. There is a combination dungeon cell, also shower-bath cells on this floor.

The old jail building was remodeled throughout. From this building the administrative functions of the new isolated jail are controlled. It contains the jailer's office, cuisine, storage rooms, lockers, laundry, women's and juvenile department, witnesses' rooms, visitors' rooms, women's hospital ward, matron's room, padded cell, etc. There are sixteen cells for women and juveniles. Both structures are fireproof throughout.

CELL IN NEW WING, STATE REFORMATORY, RAHWAY, N. J.



NEW CELL WING, STATE REFORMATORY, RAHWAY, N. J.

Some English Brickbuilders.

THE WORK OF F. W. TROUP, F. R. I. B. A.

BY R. RANDAL PHILLIPS.

THE opinion of the man in the street, though based on very limited knowledge, always offers some points of contrast which are well worth the consideration of those within the charmed circle of the profession. Coteries of architects tell one another what they think of the public taste; they rail against it; grow fervid with accusation; demolish in scorn the pet likes and dislikes of the uninitiated layman. And they go away feeling very satisfied, their heads brushing the stars. Some of them, alas, show a different front to things when they have to face them next morning in the course of everyday business; when they have to meet the stated requirements of a client who, other than a client, is an egregious evil. And amid such conditions the architect sometimes falls from his high estate. Perhaps, indeed, he never possessed the ability to soar to any heights of excellence, except in words—words which come with such facility when punctuated by the applause of those who professionally think the same as the speaker. So that not unseldom we have the sad example of an architect who talks well, yet does monstrous ill. It has been said of the craftsman, as of the architect, that the more fluent his thoughts are, as expressed in his work, the less likely it is that he will be found fluent in speech.

But there is still another class besides those whose chief merit is in words alone. Among architects in practice will be found a certain number who unquestionably possess ability, but who are obsessed by the idea of doing something fresh. They wish to proclaim emphatically that they are not of the Ephraimites. In the secret of their own judgment they place themselves in the van. They are content to regard with very mild approval the efforts of those who work within the prescribed limits of any one style. Some of them abandon precedent, cast aside all design by rote. They take the orders, elongate and compress them, cut off cornices and mouldings, and then, with an infusion of their own cherished ideas, they produce a new style—the Ugly Style. Truly the cult of these architects is no other than the cult of barren ugliness. The public howl at their productions, and the rank and file of their professional brethren are hardly less uncompromising in their criticism. This, however, is but the extreme expression of a movement which has some elements of good in it. In England to-day, while the general trend is towards the English Renaissance, continued in the spirit of our own times, there is no sympathy with the now dead formalism of the classic. But the architects who have done most to foster this movement are men of moderation. They have no desire to throw over the past *in toto*, yet they see very clearly

NORTH ENTRANCE TO "SANDHOUSE," WITLEY, SURREY.

that modern work, if it is to be worth anything at all, must be imbued with modern feeling; while, with regard to domestic architecture especially, they insist upon a proper recognition of the crafts that were united in the

THE WORKSHOPS, "SANDHOUSE," WITLEY, SURREY.

old work. Mr. F. W. Troup stands prominently among the architects who take up this position. His work runs on traditional lines, but it is full of his own individuality, always kept well within the proper limits of the material by which it is expressed. Anything affectedly abnormal, any display of mere cleverness, is insufferable to him. To quote his own advice to young architects: "In

WORKSHOPS, "SANDHOUSE," WITLEY, SURREY.

designing, above all things avoid being clever merely for the sake of effect. Cleverness is not art — more often it is mere license and a want of restraint. Be certain of this, that your best work is not that part in it which you most admire yourself, and you will be safe ruthlessly to cut out that part from your design. The clever features are like the smart sayings of an author. The latter often ruin a book as the former may ruin a design — they distract and disturb, even if they tickle the fancy. Although they may be admired for the moment it is more than likely they will live to be laughed at."

Mr. Troup's work has been almost exclusively domestic. He is a great builder of houses, and an able exponent of brickwork. So far, the largest example which he has carried out is "Sandhouse," near Witley, in Surrey, though at the present time an even more elaborate house built entirely of brick is being completed from his designs. But "Sandhouse" serves very completely to illustrate his methods. The house is built with wood-burnt bricks of a good red color, obtained in the neighborhood, with headers — "flare-ends" of a soft gray color — arranged to form a diaper. The roof is tiled, and all exterior woodwork is of oak. The main entrance is on the north front. From the accompanying illustration it will be seen that the "porch" is an unusual one. It is carried on stone pillars and has a decorative panel in cement as a central feature. On the dormer in the roof above is to be seen some interesting lead work, and especially in the several rain-water heads and down-pipes, which were all designed by Mr. Troup and proclaim his zeal for the crafts — a zeal which shows itself, in fact, throughout the house.

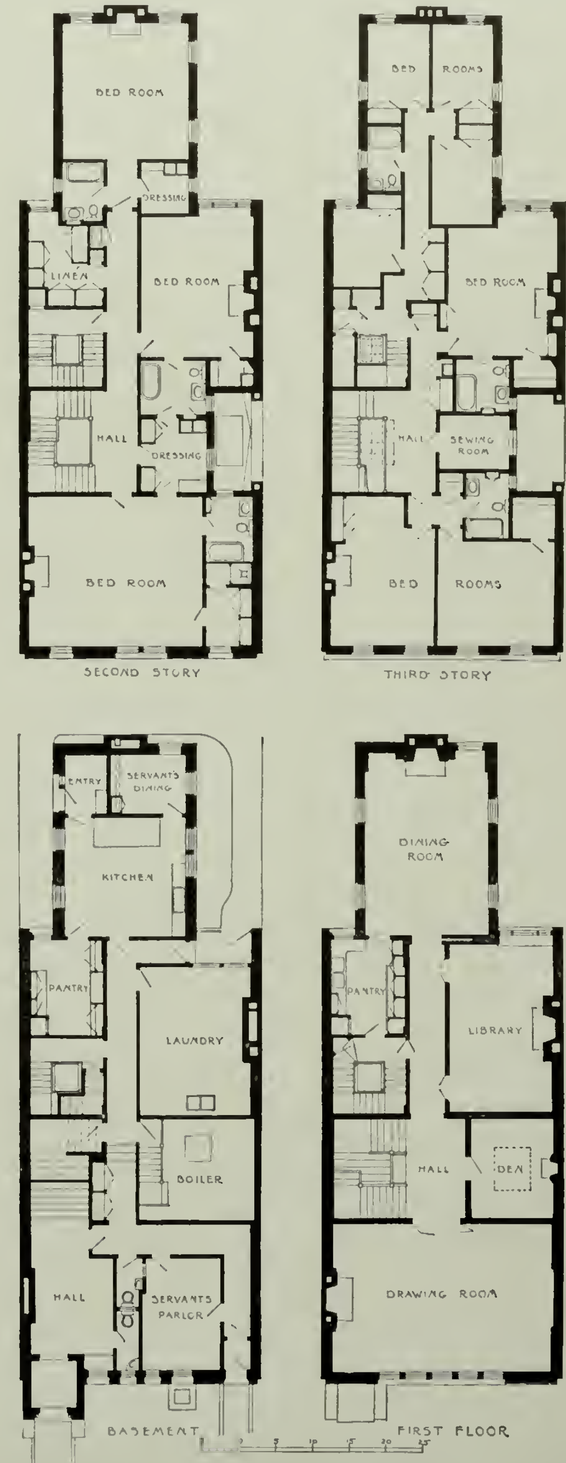
TURRET OVER COACH-HOUSE, "SANDHOUSE," WITLEY, SURREY.

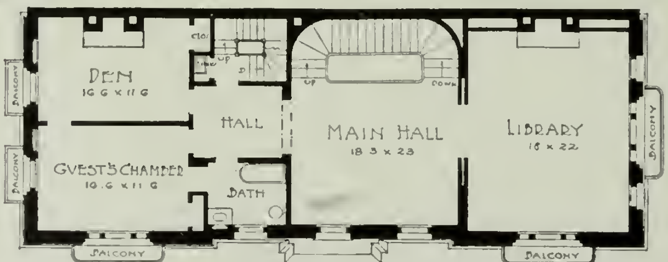
The porch leads into a large hall having a fireplace at one end. This hall is wood-paneled, the paneling including some fine work. Over it is a decorative frieze of colored plaster, though this was not in the architect's original design, and is rather too heavy in character. The beams and joists are of Oregon pine, the floor is of oak.

As the illustration shows, the furniture of the hall is in keeping with the design, and the total effect is particularly pleasing. In the drawing room a feature is made of the fireplace, which is arranged in an inglenook at one end, surrounded by large square green tiles,

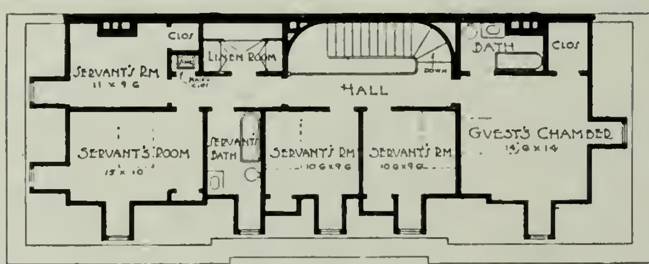
HOUSE ON
ASTOR STREET,
CHICAGO,
ILL.

POND
&
POND,
ARCHITECTS.

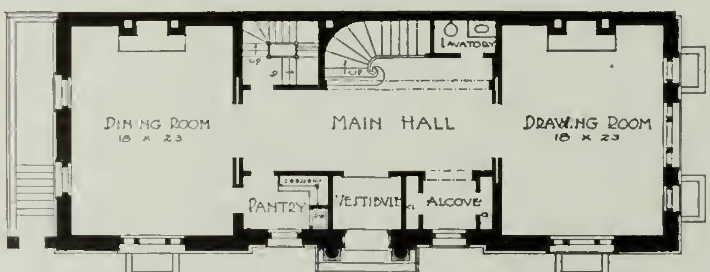




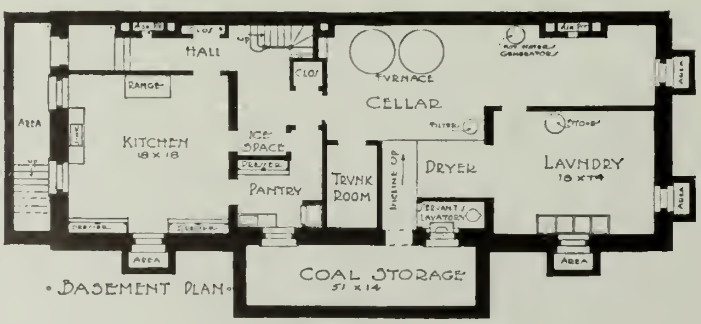
• SECOND FLOOR PLAN •



• FOURTH FLOOR PLAN •



• FIRST FLOOR PLAN •

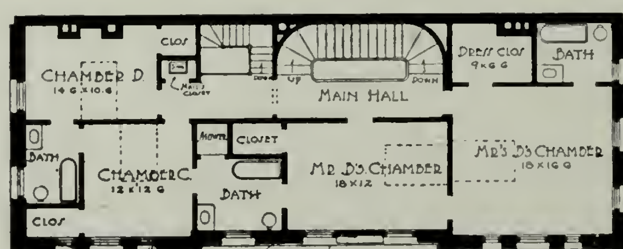


• BASEMENT PLAN •

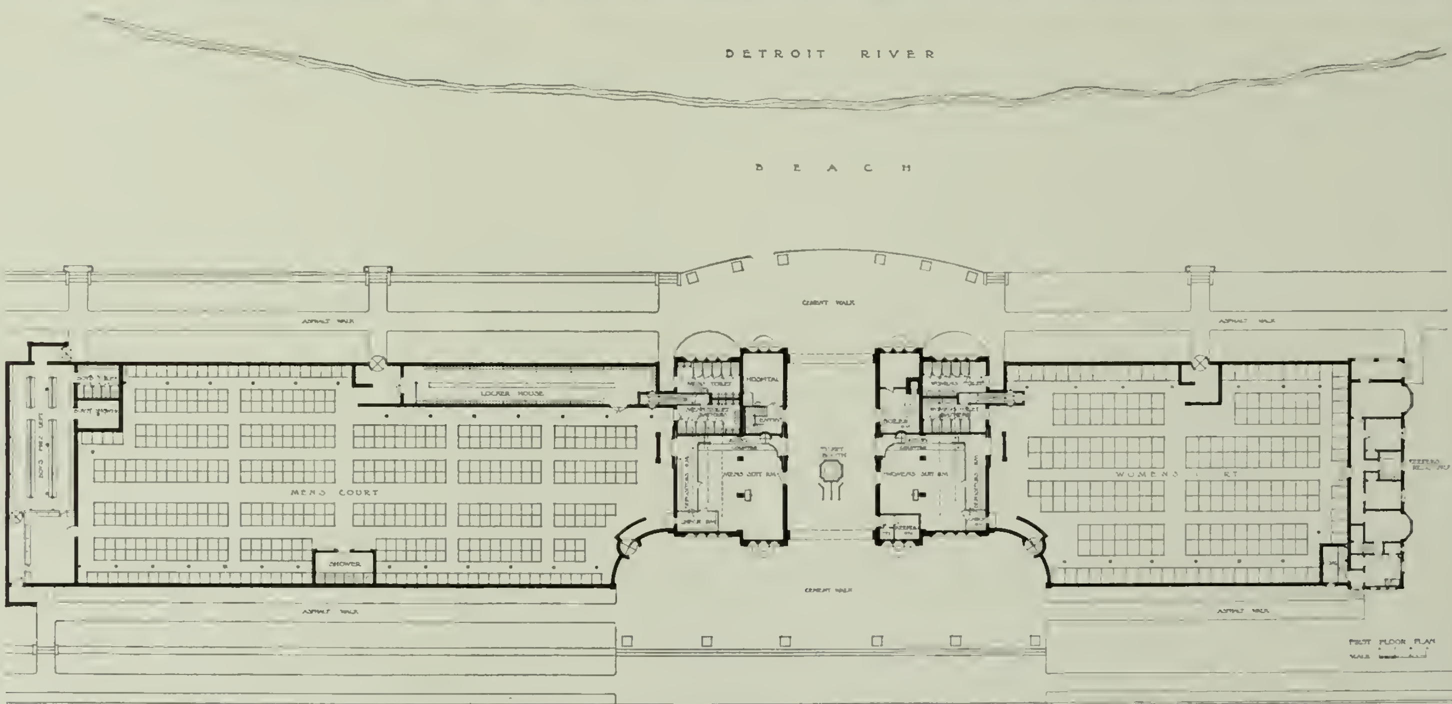
HOUSE ON LOCUST STREET,

PHILADELPHIA.

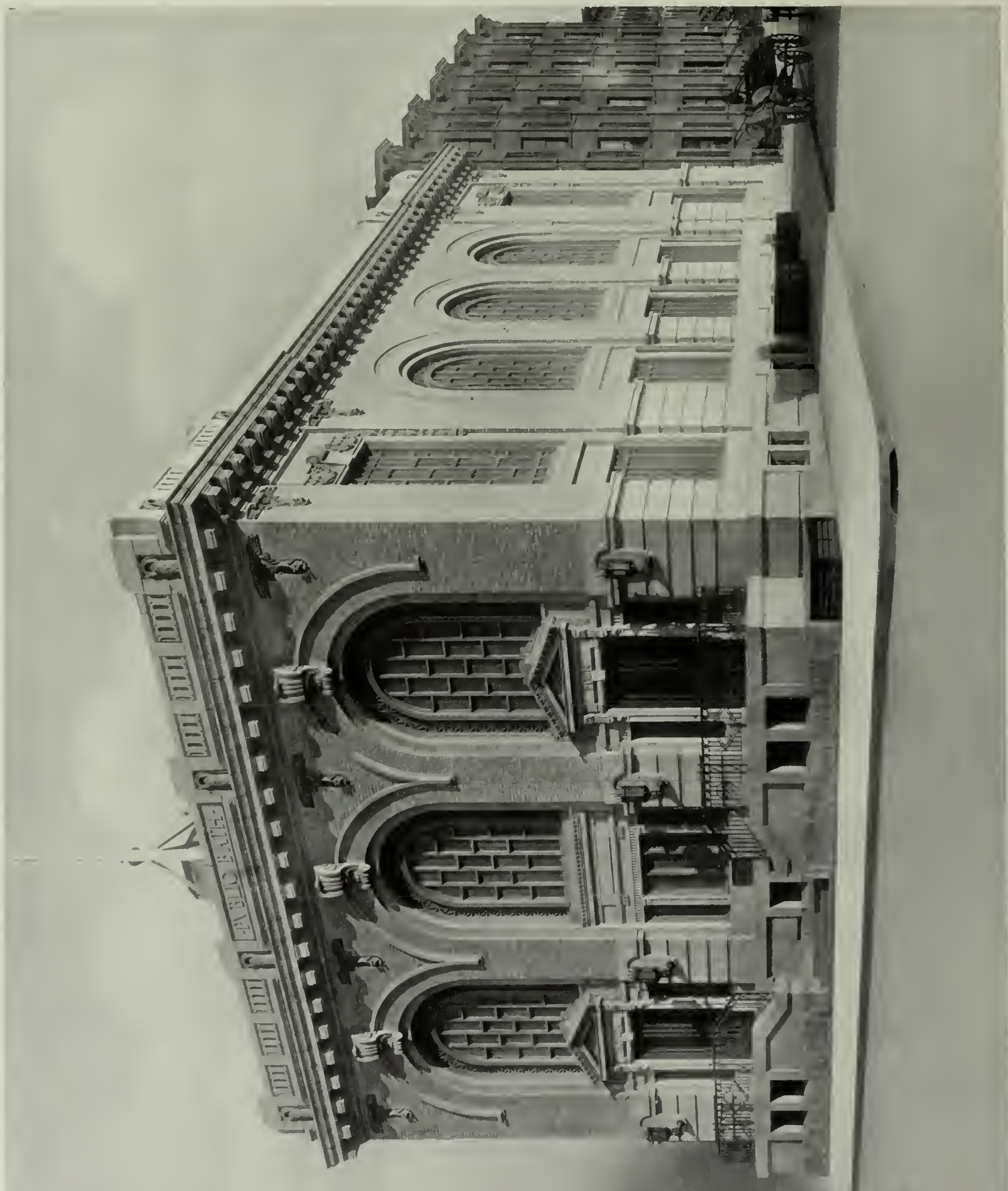
HORACE TRUMBAUER, ARCHITECT.



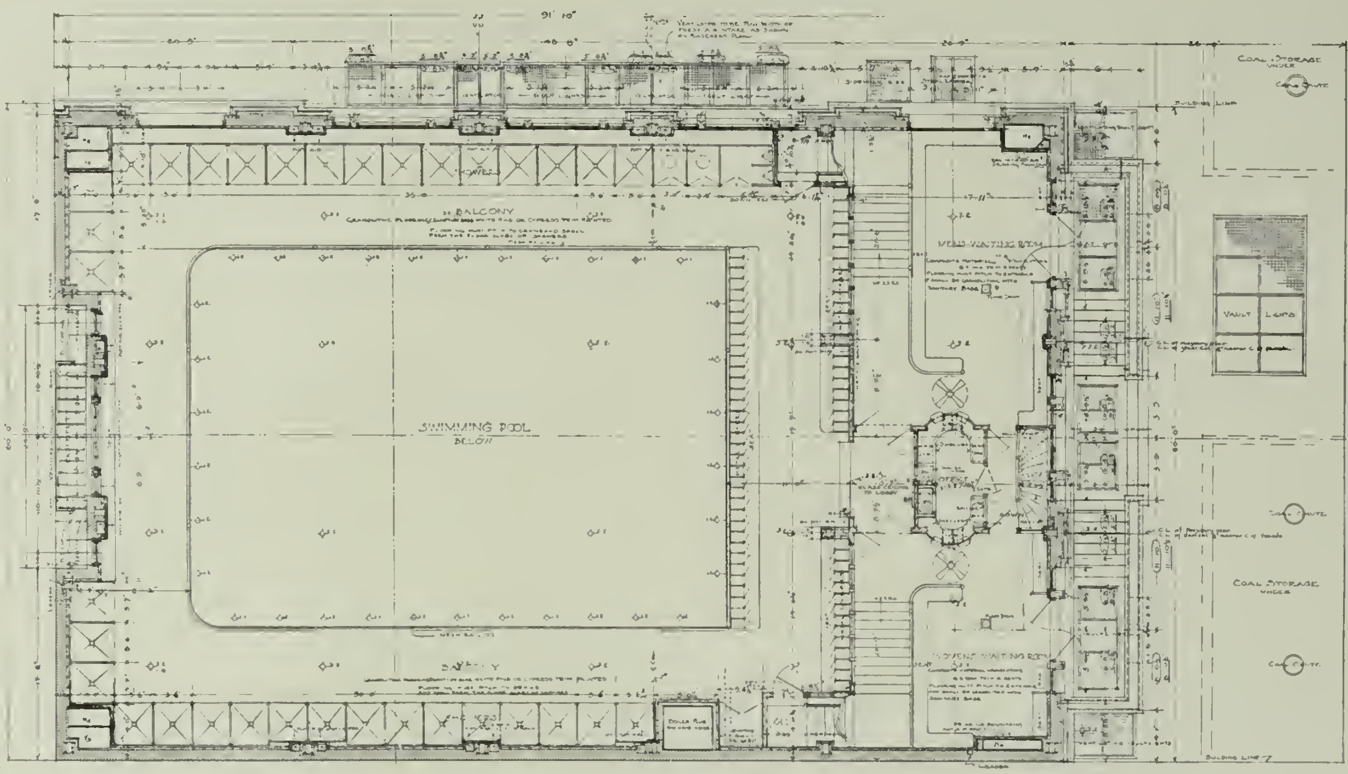
• THIRD FLOOR PLAN •



BATH HOUSE, BELLE ISLE, DETROIT, MICH.
STRATTON & BALDWIN, ARCHITECTS.



BROOKLYN PUBLIC BATH, BROOKLYN, N. Y.
RAYMOND F. ALMIRALL, ARCHITECT.

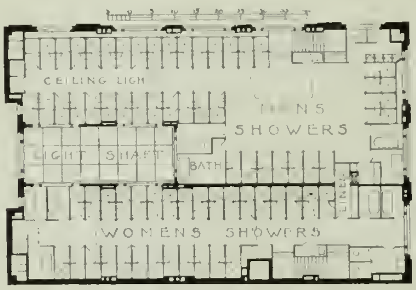


FIRST FLOOR PLAN.

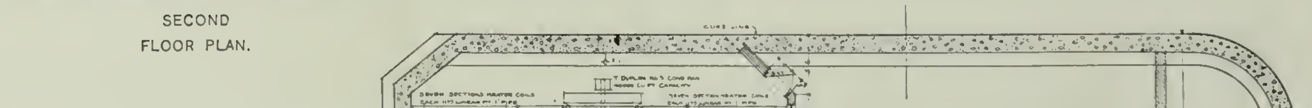
BROOKLYN PUBLIC BATH.

BROOKLYN, N. Y.

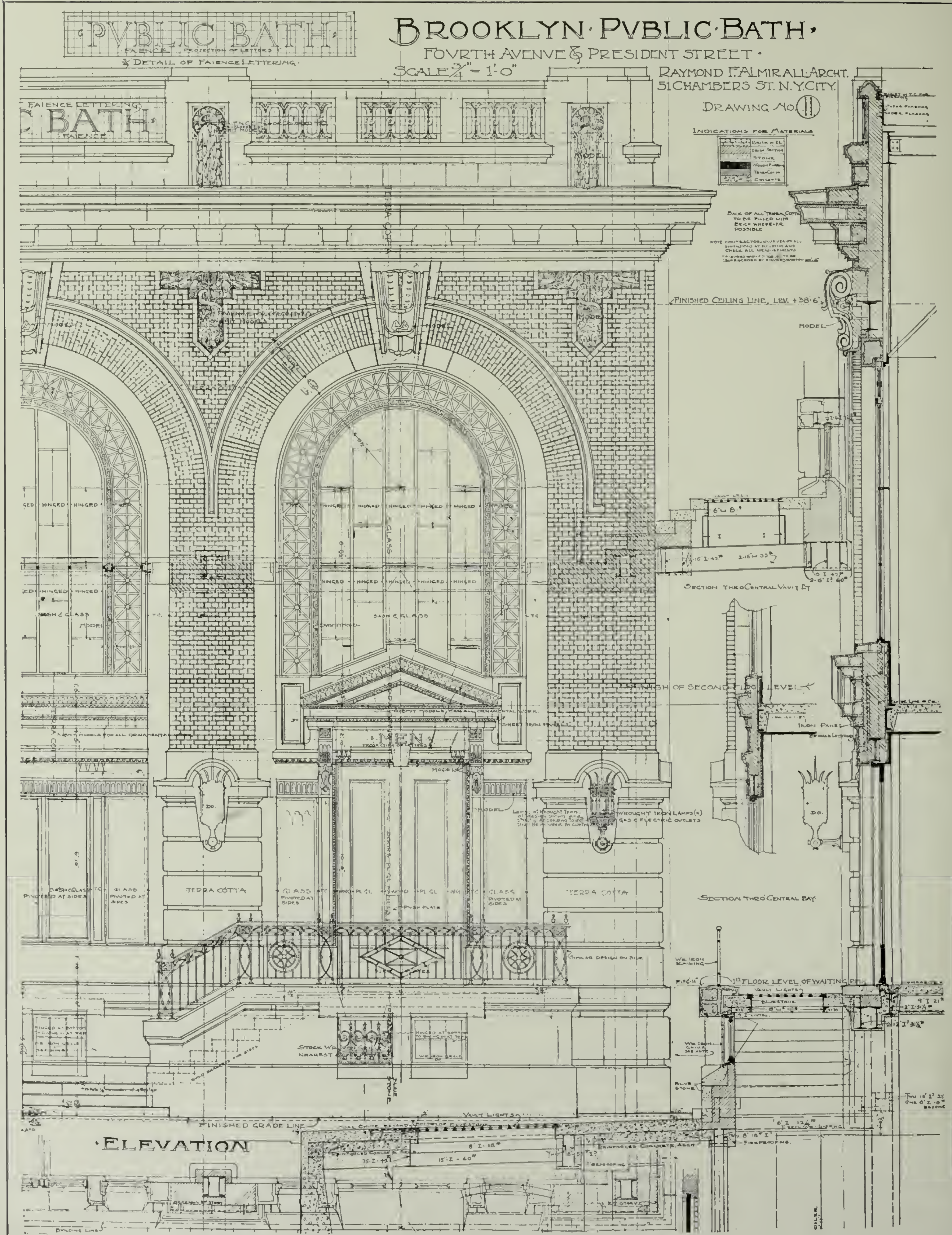
RAYMOND F. ALMIRALL, ARCHITECT.



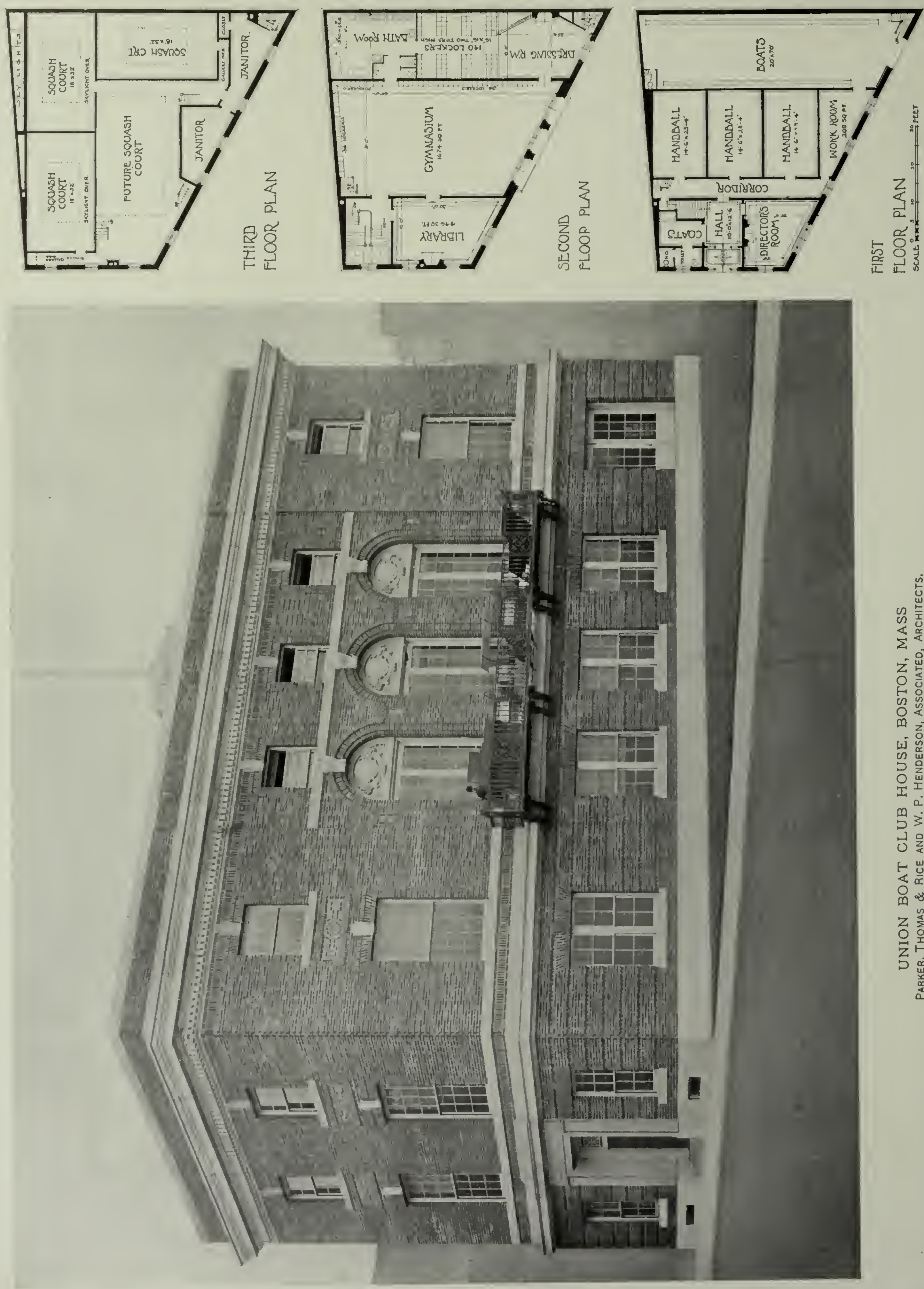
SECOND
FLOOR PLAN.



BASEMENT PLAN.

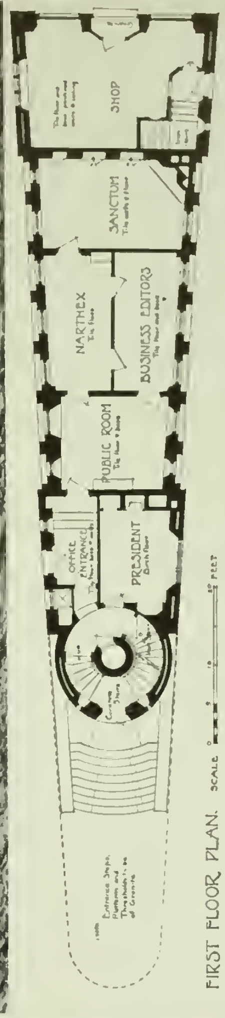


DETAIL OF FRONT ELEVATION, BROOKLYN PUBLIC BATH.
RAYMOND F. ALMIRALL, ARCHITECT.



UNION BOAT CLUB HOUSE, BOSTON, MASS.
PARKER, THOMAS & RICE AND W. P. HENDERSON, ASSOCIATED, ARCHITECTS.

BASEMENT & FOUNDATION PLAN.



FIRST FLOOR PLAN.

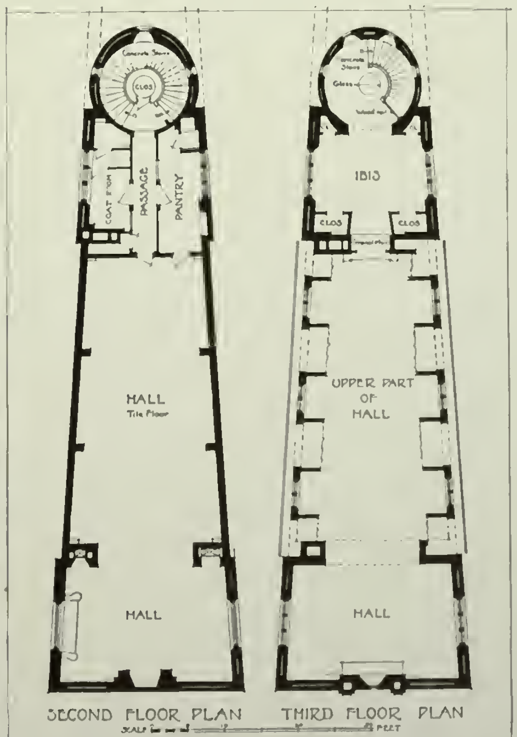
THE HARVARD LAMPOON, CAMBRIDGE, MASS.
WHEELWRIGHT & HAVEN, ARCHITECTS.

THE

HARVARD LAMPOON,

CAMBRIDGE, MASS.

WHEELWRIGHT & HAVEN, ARCHITECTS



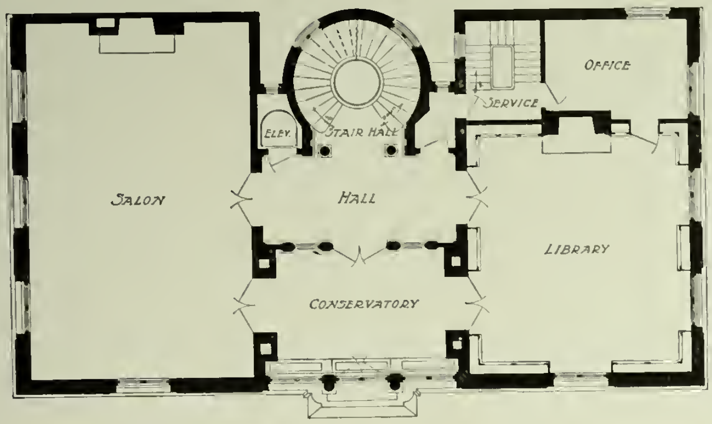
INTERIOR VIEWS.

THE HARVARD LAMPOON,

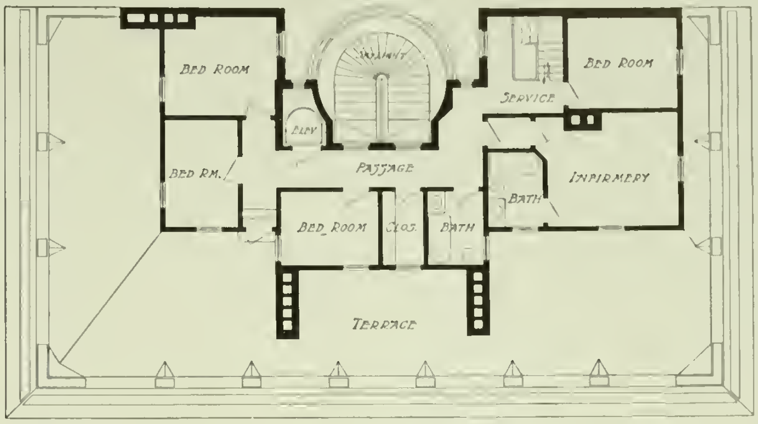
CAMBRIDGE, MASS.

WHEELWRIGHT & HAVEN, ARCHITECTS.

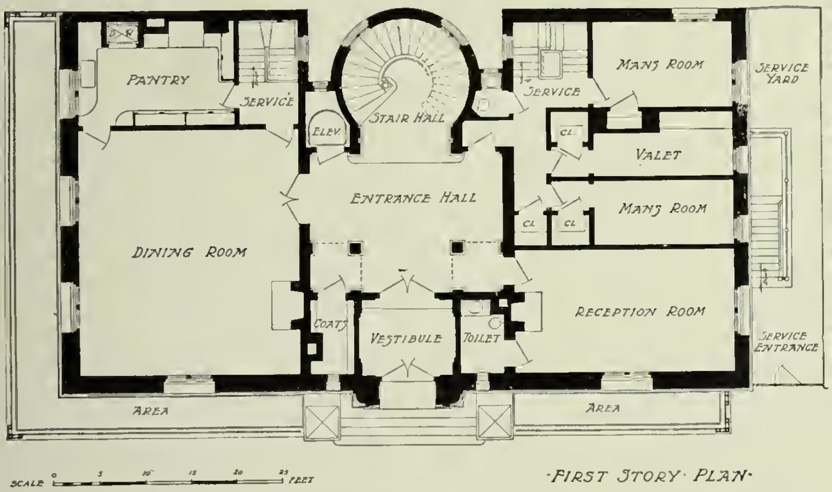
HOUSE, EIGHTY-FIFTH STREET AND PARK AVENUE, NEW YORK CITY.
HUNT & HUNT, ARCHITECTS.



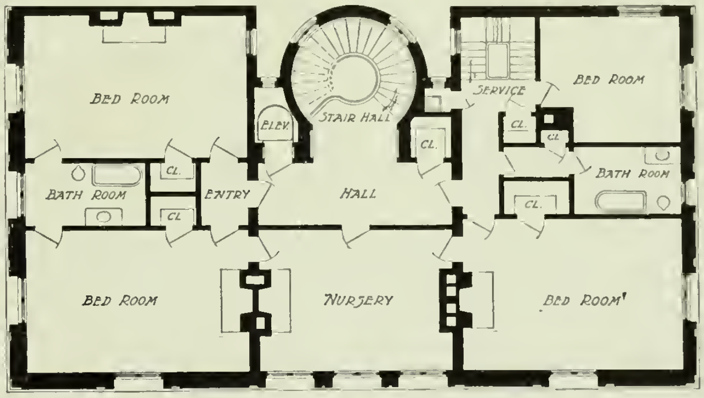
SECOND STORY PLAN



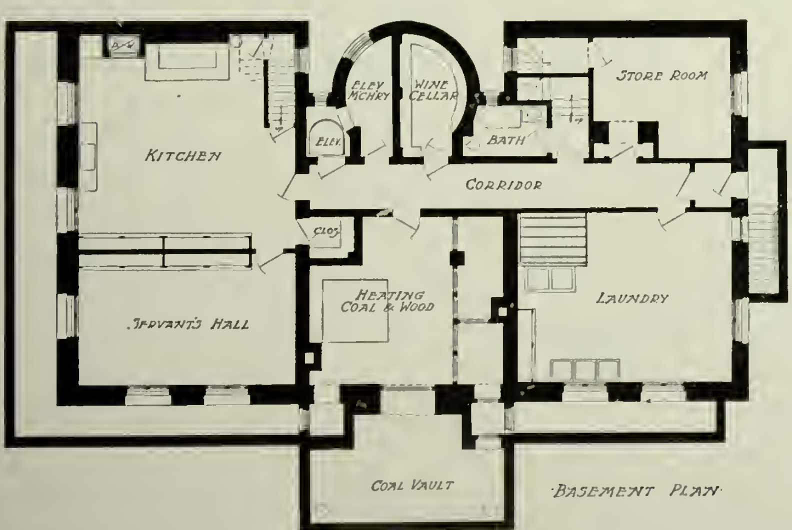
FIFTH STORY PLAN



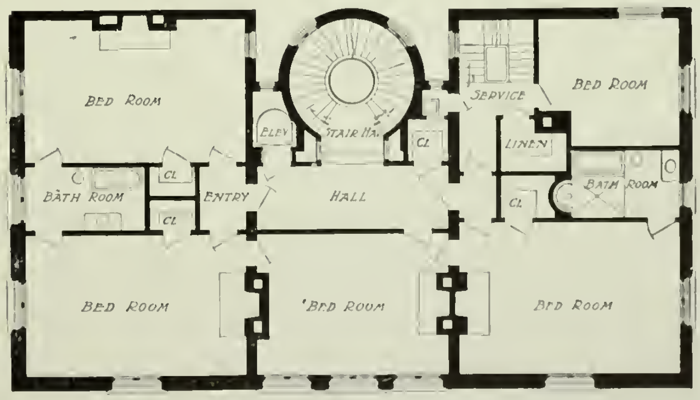
FIRST STORY PLAN



FOURTH STORY PLAN

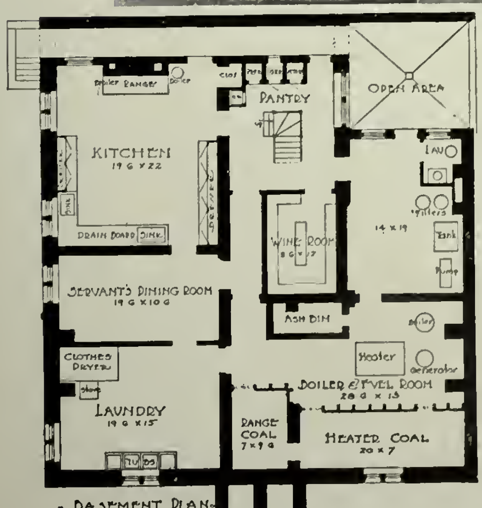


BASEMENT PLAN

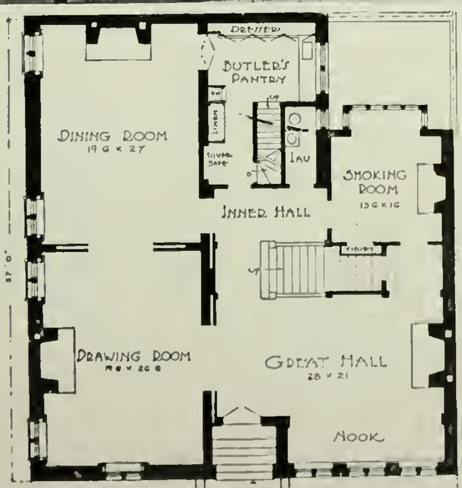


THIRD STORY PLAN

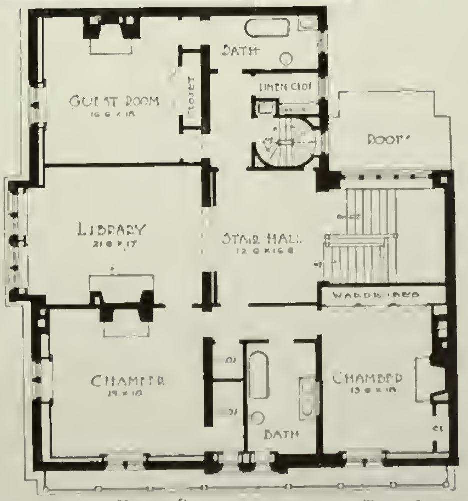
HOUSE, EIGHTY-FIFTH STREET AND PARK AVENUE, NEW YORK CITY.
HUNT & HUNT, ARCHITECTS.



• BASEMENT PLAN •

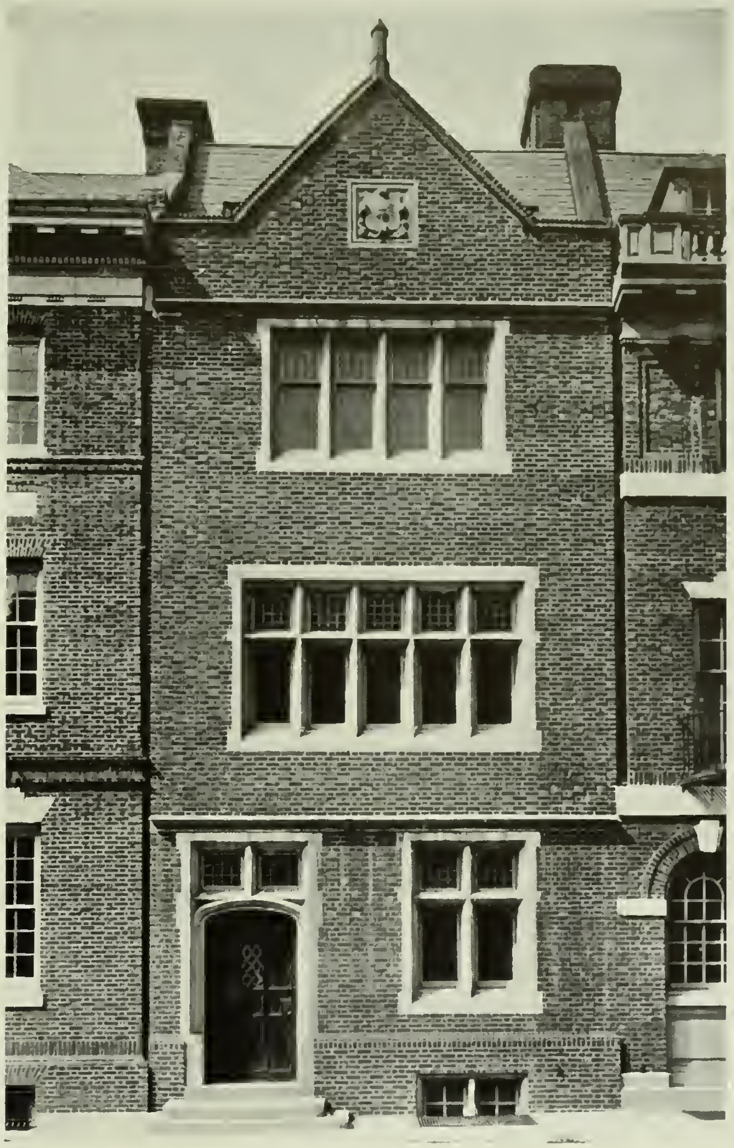


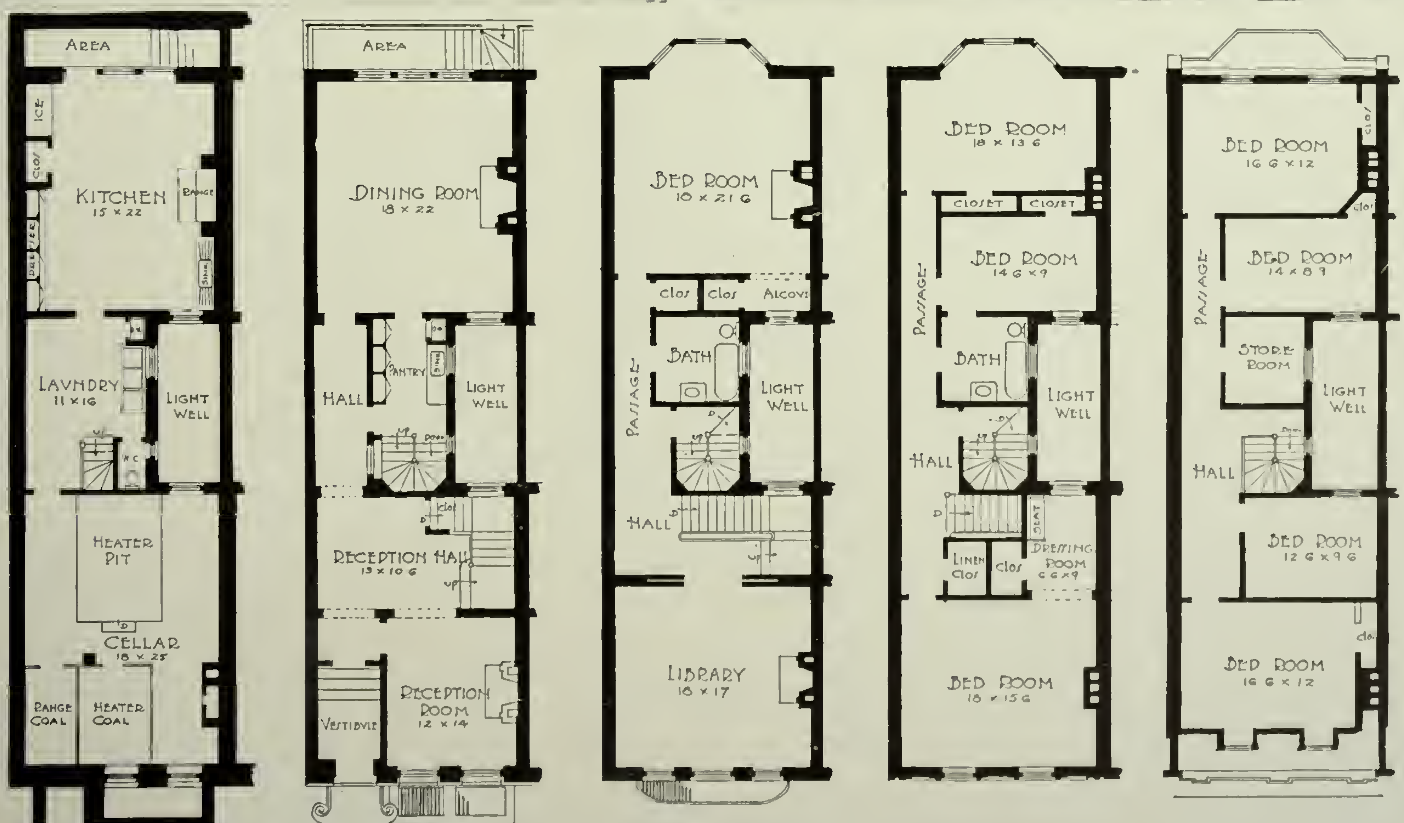
• FIRST FLOOR PLAN •



SECOND FLOOR PLAN • CHAMBERS IN THIRD & FOURTH FLOORS •

HOUSE ON LOCUST STREET, PHILADELPHIA.
FIELD & MEDARY, ARCHITECTS.



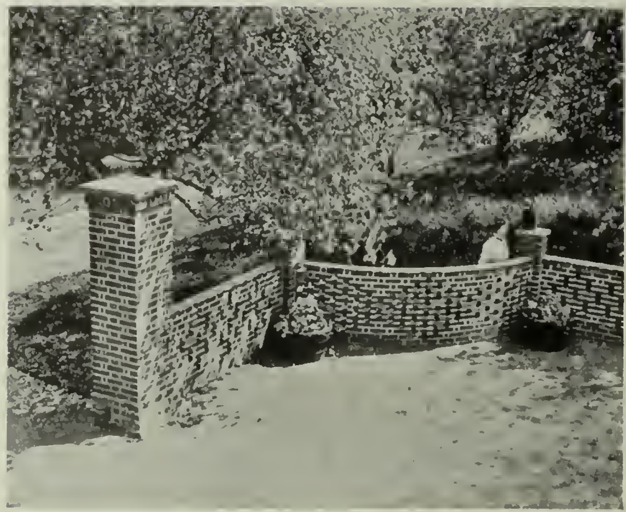


• BASEMENT PLAN • • FIRST FLOOR PLAN • • SECOND FLOOR PLAN • • THIRD FLOOR PLAN • • FOURTH FLOOR PLAN •

HOUSES ON LOCUST STREET, PHILADELPHIA.
CHARLES BARTON KEEN, ARCHITECT.

GARDEN FRONT, "SANDHOUSE," WITLEY, SURREY.

THE HALL, "SANDHOUSE," WITLEY, SURREY.



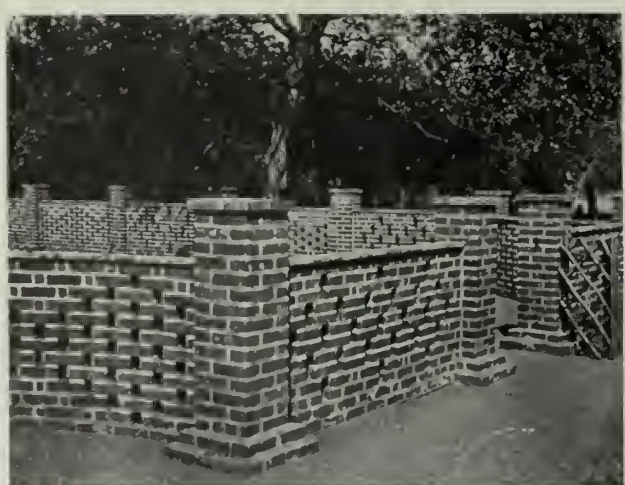
THE FORECOURT WALLS AT "BELCOOMBE," SAXLINGHAM, NEAR NORWICH.

with narrow blue tiles between. The woodwork in this room is of oak.

In the outbuildings — the coach house, stables, workshops, etc. — Mr. Troup has continued the treatment adopted for the house itself, and innumerable instances of his individuality are displayed; such, for example, as the turret on the coach house, with its lead-faced clock, and the combination of elm-boarding and brick in the workshops. The whole design is essentially English in character, unostentatious, and satisfactory.

Another house by Mr. Troup is "Belcoombe," Saxlingham, near Norwich. It is not by any means so large as "Sandhouse," and it does not offer so many points of interest as a piece of modern brickwork, but it possesses two features which merit notice as curious practical experiments on the part of the architect. These are the forecourt wall and the wall dividing the kitchen garden. Economy was a great consideration in this case, and in order to meet the requirements Mr. Troup had recourse to single brick walls. To build them straight in the ordinary way would have been useless, because the walls would have been unstable. In the forecourt, therefore, they are planned in short segments bound together with piers, and rendered more attractive by the omission of certain bricks so as to form a pierced pattern. Mr. Troup has thus been able to use only 4½ inch walls — that is, one brick thick instead of two. But the most ingenious attempt in this direction is the wall in the kitchen garden at "Belcoombe." The accompanying illustration, taken from a height shortly after the house had been completed, shows what an amazing thing this wavy wall is. Yet it is not a freak, but a genuinely practical and most successful endeavor to secure economy combined with efficiency. Like those in the forecourt, this wall too is only one brick thick (4½ inches). It is built of ordinary 3 inch bricks and set out in curves or bays measuring about 16 feet center to center, and 3 feet across from an imaginary cord drawn at the base. By building the wall in this way it was possible to effect a saving of $25 on a 9 inch wall. The linear measurement of the wall is more than that of a straight wall of the same length, but the cubic measurement is only five-eighths that of a straight wall two bricks thick. The curved wall, of course, though only one brick thick, has

CURVED WALL AT "BELCOOMBE," SAXLINGHAM, NEAR NORWICH.



THE FORECOURT WALLS AT "BELCOOMBE," SAXLINGHAM, NEAR NORWICH.

a substantial base area, and its efficacy was tested soon after it had been built, for at that time it withstood a very severe gale; the brickwork was then green and the coping had not been put on, so that the ultimate strength of the wall was at once made evident. Moreover, in this particular case, the curved wall bays have the merit of acting as "sun-traps" for the fruit-trees which they enclose.

The view of the wall taken at ground level is free from the exaggeration of the other view, taken from above, and shows that the attempt here made is a most successful one. The wall was Mr. Troup's own idea, though an example at Wroxall Abbey, Warwick, reminds us again that there is nothing new under the sun — for here is to be found a wall planned in semicircles with straight connecting pieces, attributed to Wren, though the wall is not any such attempt at economy as Mr. Troup's, being 18 inches thick for the first 2 feet, and 12 inches above.

WAVY WALL AT "BELCOOMBE," SAXLINGHAM, NEAR NORWICH.

The foregoing examples serve to illustrate the character of Mr. Troup's domestic work. That he does not lose his merit when brought under city conditions, we may see by turning, in conclusion, to the extension which has recently been made to Whitefield's Tabernacle in Tottenham Court Road, London. The extension, for the most part, takes the form of a small hall at the side of the main building and partly under ground, but on the street side a shop has been erected, with rooms over. The walls are of gray bricks, with Portland stone dressings. At each side of the shop front are glazed brick piers, and above the sign (which is painted on a slab of slate) are panels filled with small red and black Dutch bricks, arranged to form a pattern; a similar treatment being followed at the rear, the whole showing that even with so limited an opportunity as this little building offers, Mr. Troup has been able to produce a result full of interest. Here, too, his love of craft work has not been left unexpressed, for the ridge is covered by ingeniously contrived lead plates, decorated with a raised pattern, these plates being arranged with a lap at the sides, and at the top a lug through which is driven the nail that holds the plates in position, the lug being afterwards folded over the nail-head, thus ensuring a sound piece of work.

REAR VIEW, EXTENSION TO WHITEFIELD'S TABERNACLE, TOTTENHAM COURT ROAD, LONDON.

FRONT VIEW, EXTENSION TO WHITEFIELD'S TABERNACLE, TOTTENHAM COURT ROAD, LONDON.

An Inexpensive and Durable Type of Construction.

BY C. H. HUGHES.

A NEW type of construction is here shown which employs hollow blocks, made from hard burned clay having ribs on the sides about 3/8 inch wide by 1/8 inch deep and grooves on the top and bottom about 1 inch wide by 3/16 inch deep (Fig. 1). Other blocks are made with only one of the sides ribbed, but with grooves on the top and bottom. Owing to the shape of the ribs a stucco or plaster finish can be applied which will cling firmly to the sides.

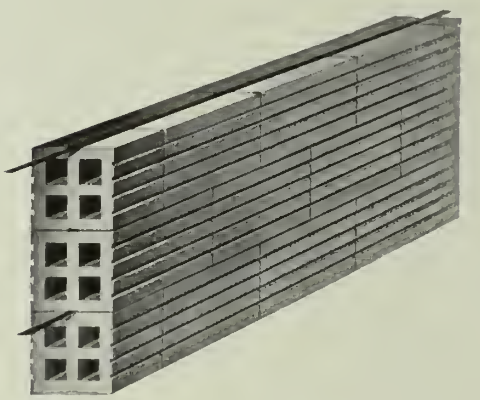


FIG. 1.

The following table gives the sizes, weights, and number of air spaces of these blocks.

4″ × 8″ × 12″	16 lbs.	24 lbs. per sq. ft.	2 air spaces.
6″ × 8″ × 12″	22 ,,	33 ,, ,, ,, ,,	4 ,, ,,
8″ × 8″ × 12″	28 ,,	42 ,, ,, ,, ,,	4 ,, ,,
12″ × 8″ × 12″	34 ,,	51 ,, ,, ,, ,,	6 ,, ,,

The blocks are adapted particularly for wall construction, either for buildings or retaining purposes where an even temperature is required. This is brought about by the air spaces, which allow a cushion of air to be always between the two sides of the wall. The blocks are laid with the air spaces horizontal, and a steel band 1 inch by 1/8 inch is placed between them and embedded in Portland cement, which thoroughly binds them together, the grooves preventing the cement from slipping. The bands add greatly to the strength of the wall, and permit with safety a reduction in the thickness. It is estimated that an 8 inch wall of these blocks built in the manner described equals in strength one of 12 inch of common brick. When a wall has a long reach piers are used to reinforce it. The piers consist of two lines of blocks with notches on the sides, to receive the wall blocks, as illustrated in Fig. 2. The steel bands protruding from the rows of blocks will be noticed, also the vertical air spaces in the piers and the horizontal spaces in the wall, and that part of the wall has a stucco or plaster finish and part has none.

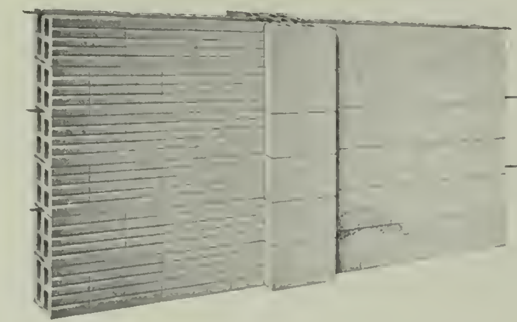


FIG. 2.

In Fig. 3 are different combinations of piers and walls. A is used around openings. The wall blocks fit into the notches in the piers and the steel bands are stopped either with the wall or bent down into the air spaces in the piers. B is for reinforcing a wall. Although the blocks are stopped the steel bands extend through the piers and tie the blocks on each side together. C is a corner pier with the bands bent at right angles and following the blocks. D is similar to B, with a partition added. E is a center pier with four walls or partitions. The bands in D and E are continuous, tying together in both cases the sections of the wall divided by the piers.

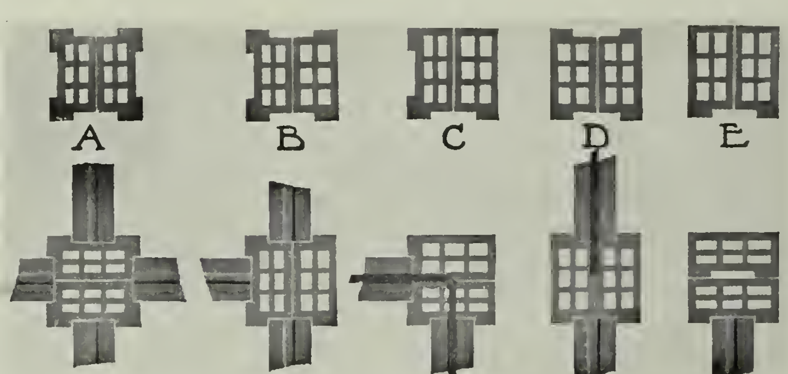


FIG. 3.

These combinations have many advantages over the ordinary brick pier and wall. For instance, 12 inch piers weigh 66 pounds per square foot, while those of the same size of brick weigh 84 pounds per square foot. The former is fully equal to the latter in strength as a column, and has the further advantage of saving about twenty-five per cent in the weight, thus decreasing the shipping charges and cheapening the cost of the foundations. The piers may be

BUILDINGS FOR BAKER OIL WORKS, BAYWAY, N. J.
Showing terra cotta hollow tile wall construction.

spaced to carry the floor girders, doing away with the steel columns. When, however, columns are used, special blocks are made to fit them, the steel bands being stopped at the columns.

The accompanying illustrations are of two buildings erected by the Standard Oil Company, and are good examples of this type of construction. The walls of the building at East Boston are of 6 inch blocks, the columns dividing the walls into panels — the largest panel being 21 feet long by 12 feet high. This building cost about 9⅓ cents per cubic foot.

BUILDING FOR STANDARD OIL COMPANY, EAST BOSTON, MASS.
Showing terra cotta hollow tile wall construction.

The building at Bayway has a steel skeleton of standard 8 inch I beams covered with these blocks 6 inches in thickness. The largest panel is 37 feet high by 20 feet 6 inches wide. In estimating new work the Standard Oil Company allows 16½ cents per cubic foot for walls built with 4 inch blocks— 22½ cents per foot for walls built of 6 inch blocks, and 28 cents per square foot for walls built with 8 inch blocks. These prices include blocks, scaffolding, steel bands, cement, etc.

Besides the blocks described others are made which are suitable for copings, lintels, sills, and covered surfaces.

Plate Illustrations— Description.

The Brooklyn Public Bath, Brooklyn, N. Y. Plates 34, 35, 36. The materials used on the exterior of this building are brick, terra cotta, bluestone, and bronze. The colors of these materials have been carefully selected with the purpose of giving dignity and harmony to the structure. The plan provides for a basement partly below the sidewalk, first floor 6 feet above the sidewalk, and a second story. In the basement the pool, which is 40 feet wide and 58 feet long, was planned so that five lengths with the turns would give a standard distance of 100 yards. Surrounding the pool is a passage 6 feet wide, the floor of which is always kept warm by the main hot air ducts, which are located in a chamber beneath. The pool has a capacity of 80,000 gallons of water, with an inflow and outflow of 20,000 gallons per hour, giving a complete change of water every four hours. The hot water supply for the pool is entirely independent of the supply for showers. By introducing a part of the inflow at the top of the pool there is a constant supply of clean surface water. The pool and floor of passage are surfaced with non-absorbent marble granolithic, the floor of passage being pitched to drain away from pool. The heating system combines the direct and indirect. The indirect system supplies 40,000 cubic feet of air per minute, and has been arranged so that the rising vapor, which always occurs where hot water is used in large quantities, will be thoroughly dissipated. The system of heating is reversible, supplying hot air in winter and cold air in summer. For ventilation, a complete blower system has been installed, with a capacity to deliver 20,000 cubic feet of air per minute.

On the first floor the men's waiting room is approximately one-third larger in area than the women's, as it has been found by experience that a larger percentage of men use the public bath. The office is used for the distribution of towels and general supervision of this floor. The entrance and exit of patrons between waiting room and bath are well regulated by an electrically controlled turnstile. Thirty-four cleansing showers and seventy lockers are arranged about four sides of a balcony overlooking the pool; the lockers are placed at the front end of balcony to form a robing and disrobing space for those using the pool. It is intended, by a regulation of hours, to use the cleansing balcony together with the pool for men or women. On the second floor the shower and tub baths are disposed on a corridor plan, which facilitates supervision. Each compartment consists of a dressing room, separated by a marble partition from the shower, the floor of which is depressed and separately drained. The partitions for all showers and toilets throughout the building are of Italian veined marble, the floors of non-absorbent materials. As far as possible all angles have been eliminated by using rounded corners and sanitary bases. The showers for women throw the water at an angle on the body, and are provided with a self-closing valve and an automatic anti-scalding valve. The building complete contains one hundred and five showers and nine bath tubs, giving an estimated capacity of 1,500,000 baths a year.

House at Chicago, Ill. Plate 31. The exterior treatment is in two tones of face brick with considerable texture. Upon the interior oak is used for the trim in the entrance, staircase halls, corridor, den, and dining room. The library is finished in mahogany, while the drawing room and chamber stories are in white enamel. The ceilings of the den and dining room are beamed, that of the drawing room is finished in ornamental plaster, while that of the first floor passage is vaulted. All floors are of oak except the kitchen, which has rubber tile, and the laundry, which has cork tile. There is no waste space either in the attic or cellar. Provision has been made for the installation of an electric automatic elevator. The laundry is equipped with a power laundry plant. A vacuum cleaner has also been installed. In cubing, the entire ground area was taken and the height measured from 6 inches below the basement floor to the top of the parapet. The cubage on this basis was approximately 36 cents.

Harvard Lampoon Building, Cambridge, Mass. Plates 38, 39, 40. The building was erected to house the Harvard Lampoon Society, which publishes the *Lampoon*. In addition to the publication offices and club rooms there are small shops on the ground floor. The exterior of the building is of hard burned red brick with dark headers. The old Weigh-Houses of Holland furnished a suggestion for the architectural treatment. One of the rooms illustrated is finished in Delft tiles, of the seventeenth and eighteenth centuries, which were purchased by the architects in Holland. Further inspiration was drawn from the old church at Jamestown, Virginia, which has been restored recently by the architects of the Lampoon Building. This old church itself is patterned after one at Smithfield, Virginia, which is an example of indigenous American Gothic architecture.

Public Bath, Detroit, Mich. Plate 33. The present building has four hundred and fifty-one rooms and two hundred and eighty-five lockers in the men's department and one hundred and ten rooms in the women's department. The architects have prepared plans for increased accommodations, which will result in a maximum capacity of one thousand seven hundred and thirty-eight rooms in the men's department and three hundred and ninety-eight rooms in the women's department. The administrative arrangements are very simple. The bathers enter the open vaulted corridor in the center and after purchasing tickets proceed into the separate rooms for men and women, where suits are distributed. Here they deposit their valuables with an attendant and proceed into the court, where the dressing rooms are located. From this point they pass to the beach through a gate in the wall. After bathing they return to the court and dressing rooms, from where they leave without re-entering the central part of the establishment. All entrances and exits are controlled by registering turnstiles. The wet bathing suits are immediately sent on mechanical conveyors to the laundry, which is located in the second story and equipped completely with modern laundry machinery. After the suits have passed through the laundry they are lowered by elevators to the suit rooms for distribution. The maximum capacity of the laundry is 17,000 pieces per day including suits and towels. The first story of the central building and all walls about the courts are faced with vitrified paving brick of a rich red color. The entire building is of fireproof construction and in addition to the administrative conveniences above mentioned, there is a well equipped infirmary for use in emergencies. The present building cost $70,000 and it is estimated that the proposed addition will cost $65,000 more. The addition will increase the accommodations about two and one-half times.

OLD CHURCH AT JAMESTOWN, VA.
Restored by Wheelwright & Haven, Architects.

Editorial Comment and Miscellany.

THE New York Chapter of the American Institute of Architects offers medals for the handsomest buildings of the tenement house and high class apartment house type erected in the city of New York during this year. In offering the medals the object has been to encourage the erection of houses that will add to the beauty and attractiveness of the city. The idea as explained by Mr. Arnold W. Brunner, president of the Chapter, "is to stimulate a desire among the men who put up our city structures to add, as far as possible, to its beauty. To secure a medal does not mean that the builder will be required to spend any additional sum of money. Many of the simplest structures are far handsomer and contribute more to the charm of their locality than buildings of a highly ornate character."

Mr. Brunner admits that the plan is an experiment on novel lines, and the exact system to be adopted in determining the manner of making the award is now under consideration by the executive committee, consisting of Mr. Brunner, Henry Bacon, Frank H. Holden, Robert D. Kohn, and Burt L. Fenner.

CONVENTION OF THE NATIONAL BRICK MANUFACTURERS ASSOCIATION.

AT THE convention of the brick makers held at Pittsburgh early in February, which was attended by the leading manufacturers of the country, the dominating thought seemed to be to improve the methods of manufacturing brick and to lessen the cost so that the product should meet the every demand of the architect and be able to compete favorably with all other kinds of building material. Never in the history of this or any other country has there been given into the hands of the architect a better variety and quality of brick. The manufacturers

THE VIRGIN AND THE APOSTLES.

DRAPED FIGURE.

DRAPED FIGURE.

DETAIL OF ENTRANCE, CHURCH OF THE HOLY GHOST, PROVIDENCE, R. I.
Entrance of white matt glaze terra cotta with depressions treated in Sienna. Atlantic Terra Cotta Company, Makers.
Murphy, Hindle & Wright, Architects.

take the ground, and rightly, that if our annual loss by fire is to be reduced from $2.50 per capita, as it now is in the United States, to 33 cents per capita, as it is in Europe, a greater use of brick must be depended upon to bring about the change. It is conceded that the initial cost of a house of brick will be from eight to fifteen per cent more than if the same house was built of wood. It can also be proven that this initial cost is soon offset by the relative cost of maintenance.

The leading brick manufacturers of the N. B. M. A. have organized the Building Brick Manufacturers Association of America. It is the purpose of this organization to carry on a campaign among prospective home builders especially, in behalf of brick. The convention was addressed during its sessions by Henry Hornbostel and Donn Barber, architects, of New York City, and Prof. Henry McGoodwin, Pittsburgh.

HIGH SCHOOL, EVELETH, MINN.
Built of dark gray brick manufactured by the Columbus Brick & Terra Cotta Company.
Bray & Nystrom, Architects.

MASONIC HOMES COMPETITION.

The Grand Lodge, F. and A. M. of Pennsylvania, proposes to build a home for aged and infirm members, and wives, widows, and orphans of members of the Masonic Fraternity, upon a site adjoining Elizabethtown on the main line of the Pennsylvânia Railroad between Lancaster and Harrisburg. The tract here owned by the lodge comprises nine hundred and fifty-seven acres, of which about two hundred and forty are reserved for the buildings ultimately to be required for the home. These, estimated to number upwards of eighty, will comprise a central building for community life, sixty to seventy cottages, chapel, hospital, schools, service buildings, etc.

The Grand Lodge has placed this

BLAKE BUILDING, BOSTON.
Exterior of building in soft white matt glaze terra cotta with rich detail. Work executed by Northwestern Terra Cotta Company. Arthur H. Bowditch, Architect.

project in the hands of a "Committee on Homes," with full authority to engage an architect and proceed with construction.

To procure a general plan for the group and an architect for initial constructions costing about $350,000 a competition has been established by the committee and will be conducted with the advice of Prof. Warren P. Laird, of the University of Pennsylvania.

The competition will be restricted to invited architects, three of whom will be especially selected and paid, while others will be chosen from among those of the open field who desire to enter and who may be approved by the committee. This approval will be given only to architects of such mature experience and reputation in the execution of large work that no hesitation would be felt in their selection under a method of direct appointment. As this might exclude younger practitioners whose ability in design would be of value to the competition the committee will consider applications from "associated architects" if a member of such association be qualified as above.

A competitive fee of $800 will be paid to (*a*) each of the three especially invited architects, and (*b*) each of those three others who rank highest in the judgment. Also to each of these will be paid such traveling expenses as may have been incurred by him in a preliminary examination of the site.

The competition will close June 18, 1910. Required drawings will be as few and simple as possible.

Judgment will be rendered by a jury composed of Professor Laird and two architects to be chosen by the competitors.

The appointed architect's commission will be at the rate of six per cent, under the statement of practice of the American Institute of Architects, and he will also receive for the use of his group plan, as restudied, the sum of $1,000.

Programs will be issued to duly invited competitors.

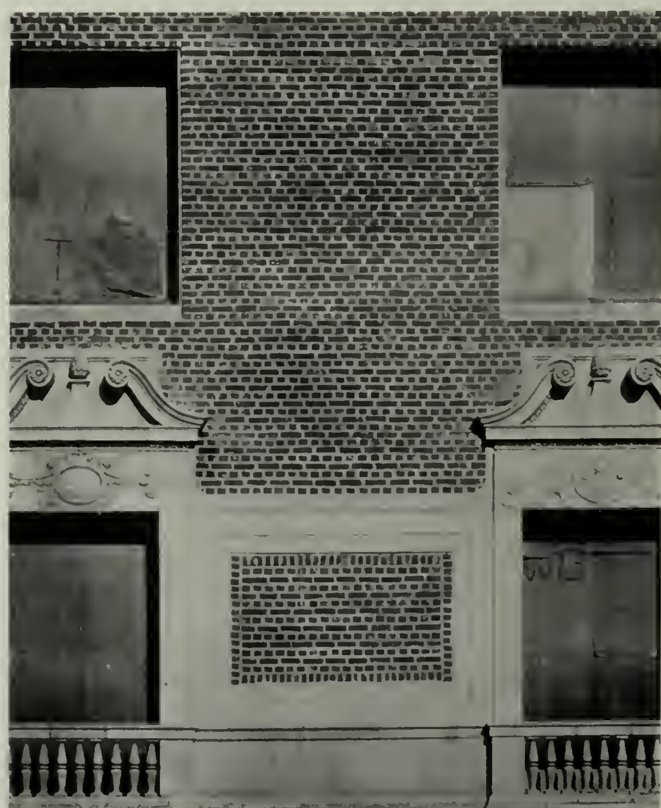
Request for blank forms to be used in applying for admission to the competition should be addressed to Hon. George W. Guthric, Grand Master, Masonic Temple, Philadelphia, Pa.

"PHOENIX" TILE CONSTRUCTION.

THE terra cotta hollow tiles of which the buildings for the Standard Oil Company were constructed — the work is described on another page of this number — were manufactured by Henry Maurer & Son, 420 East 23d street, New York. The tiles are known as Phoenix tiles.

CREDIT TO THE AMERICAN ARCHITECT.

THE interior views of the Morgan Library and the interior view of the Harvard Club, which were illustrated in THE BRICKBUILDER for February in connection with the work of Mr. McKim, were made from photographs taken expressly for the *American Architect.*



DETAIL OF BRICKWORK, RITZ-CARLTON HOTEL AND CARLTON HOUSE, NEW YORK CITY.
Carter, Black & Ayers furnished 800,000 Harvard brick for the exterior treatment of this building.
Warren & Wetmore, Architects.

DETAIL BY FOLTZ & PARKER, ARCHITECTS.
Indianapolis Terra Cotta Company, Makers.

Mr. Morgan gave permission to this journal only to photograph the interior of his library.

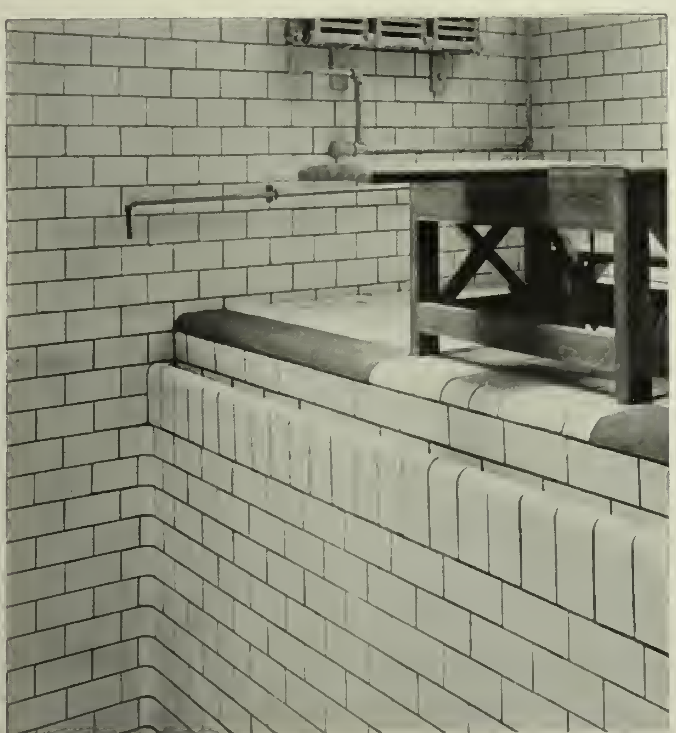
NEW BOOKS.

Gothic Architecture, Furniture and Ornament of England from the Eleventh to the Sixteenth Centuries, comprising exteriors, interiors, ornamental carving, sculpture, rare paneling, fonts, capitals, ceilings. Two volumes in one portfolio. Price $40. Boston, George H. Polley & Co.

The Architectural Forms of the Classic Ages, comprising the principal examples of the orders of columns and their entablatures with descriptive text, by Constantine Uhde. Second edition revised by R. Phene Spiers. In cloth portfolio, size 18½ inches by 14 inches. Price $20. New York, The Bruno Hessling Company.

IN GENERAL.

Ellis F. Lawrence, architect, formerly of MacNaughton, Raymond & Lawrence, has opened offices in the Lewis Building, Portland, Oregon, and at Walla Walla, Washington. Manufacturers' samples and catalogues desired.



DETAIL OF TANK FOR THE RANDOLPH RACQUET & TENNIS CLUB, CAMBRIDGE.
The life rail and gutter tile are designed and controlled by the American Enameled Brick and Tile Company.
Coolidge & Carlson, Architects.

FIREPLACE IN TICONIC NATIONAL BANK, WATERVILLE, MAINE.
Executed by the Hartford Faience Company.

The firm of Watterson & Schneider, architects, Cleveland, has been dissolved. William R. Watterson succeeds to the business with offices in the New England Building.

H. M. Chapin and T. J. Bryson, architects, have formed a co-partnership and opened offices in the Nettleton Building, Ashtabula, Ohio. Manufacturers' catalogues and samples desired.

Garnet W. Wilson, architect, has opened an office at 50 Princess street, St. John, N. B. Manufacturers' catalogues and samples desired.

Herman J. Stroeh, architect, has removed his offices to the Commercial Building, Kansas City, Mo.

Louis Preuss and Thomas F. Imbs, architects, have formed a co-partnership with offices in the Granite Building, St. Louis. Manufacturers' catalogues desired.

The Seattle Architectural Club will hold the exhibition

DETAIL BY KIRKHAM & PARLETT, ARCHITECTS.
Made by Conkling-Armstrong Terra Cotta Company.

DRILL HALL, FORT DES MOINES, IOWA.
Roofed with German tile and glass tiles, made by Ludowici-Celadon Company.
J. Knox Taylor, Architect.

of the Architectural League of the Pacific Coast, April 16th–30th, in the Public Library Building, Seattle.

The fifth exhibition of the Pittsburg Architectural Club was held in Carnegie Institute, March 2d–16th.

The Architectural Arts League and the Atlanta Chapter A. I. A. will hold their first annual architectural exhibition in Taft Hall, Atlanta, Ga., May 2d–11th.

DETAIL BY ROOT & SILMENS, ARCHITECTS.
Made by the American Terra Cotta and Ceramic Company.

The Second National Conference on City Planning will be held in Rochester, N. Y., May 2d–4th.

The Rhode Island Chapter A. I. A. will hold an exhibition of architectural drawings and photographs at the Rhode Island School of Design, Providence, March 26th–April 10th.

The Bridgeport Architectural League, Bridgeport, Conn., has been organized by members of the architectural profession located in and about Bridgeport. Officers were elected as follows: President, E. Moss Jackson; vice president, F. H. Beckwith; secretary, C. W. Walker; treasurer, H. V. O'Hara; press agent, William Schmidt.

The sixteenth annual exhibition of the T Square Club and the Philadelphia Chapter A. I. A. will be held in The Pennsylvania Academy of the Fine Arts, April 9th–May 8th. The exhibition will be one of domestic architecture only, the object being to create a greater interest on the part of the general public. The catalogue will be issued in the form of an illustrated book on domestic architecture.

The preliminary examinations for the Rotch Traveling Scholarship will be held at the office of the secretary, C. H. Blackall, 20 Beacon street, Boston, on Monday and Tuesday, April 11th and 12th, to be followed by the sketch for competition in design on Saturday, April 16th. The successful candidate receives $2,000, to be expended in foreign travel and study during two years. Candidates must be under thirty years of age, and must have been engaged in professional work during two years in the employ of a practising architect resident in Massachusetts.

The music rooms in Russell Sage Hall, Northfield, Mass., Delano & Aldrich, architects, illustrated in THE BRICKBUILDER for December, 1909, were deadened with Cabot's Deadening "Quilt."

R. Guastavino Company has been awarded the contract for the timbrel arch tile work in the new Vanderbilt Apartments, East 77th street, New York City, H. Atterbury Smith, architect. The work includes the staircases throughout the building, the lining of the cornices, and the erecting of several ceilings in finishing tile.

DETAIL BY J. WALTER STEVENS, ARCHITECT.
Winkle Terra Cotta Company, Makers.

Among the buildings recently completed which have been built of brick manufactured by the Pearl Clay Products Company, Bradford, Pa., are the following: Hospital, Bronxville, N. Y., Wilder & White, architects; United States Government Hospitals at Chelsea, Mass., Newport, R. I., and Portsmouth, N. H.; Post-office

DETAIL BY PENN VARNEY, ARCHITECT.
New Jersey Terra Cotta Company, Makers.

PORT COCHERE, BETH ISRAEL HOSPITAL, NEWARK, N. J.
Terra cotta work executed by the New York Architectural Terra Cotta Company.
Nathan Myers, Architect.

Buildings at Bar Harbor, Maine, and Carlisle, Pa.; John Hay Library, Providence, R. I., Y. M. C. A. Building, Plattsburg, N. Y., Jackson & Rosencrans, architects; Chemistry Building, Vassar College, Ewing & Chappell, architects; Hotel Sherman, Chicago, Ill., Holabird & Roche, architects; Union R. R. Station, Worcester, Mass., Peabody & Stearns, architects.

"SOUND-KILLING" WALL.

THE "sound-killing" wall between 50 and 54 East 59th street, New York City, which was built to protect the ears of the occupants of No. 54, has proven a success. The plans for the wall are the only ones of this type of construction ever filed with the Building Department.

The second and third floors of No. 50 contain large printing presses. The upper floors of No. 54 are occupied by apartments. The roar of the printing machinery proved so disturbing to the flat-dwellers that they appealed to their landlord for relief.

The wall is made of hollow terra cotta blocks stuffed with mineral wool. The blocks are of the kind used in fireproof floors and partitions. They have been known as good absorbers of sound waves, but this is the first test of them purely for that purpose. The mineral wool, in the hollow spaces, serves as a muffler. The wall also keeps the odor of printer's ink out of the apartments in No. 54.

DETAIL.
Made by the South Amboy Terra Cotta Company.

COMPETITION FOR A SMALL BRICK HOUSE.

To Cost not more than $4,000.

FIRST PRIZE, $500. SECOND PRIZE, $250. THIRD PRIZE, $150.
FOURTH PRIZE, $100. MENTIONS.

THE COMPETITION CLOSES JUNE 1, 1910.

PROGRAM.

THE problem is a small brick house suitable for a family of moderate means.

The location may be assumed in any town, small city, or suburb of a large city.

The cost of the house — exclusive of the land — shall not exceed $4,000; method of heating, plumbing, other fixtures, and finish to be governed by the limit of cost.

A detailed statement of cost must accompany each design, this statement to be typewritten on one side only of a sheet of paper measuring 11 inches by 8½ inches.

Designs which in the opinion of the jury call for a house which would cost more than the amount named will not be considered.

The object of this Competition is to obtain designs for Small Brick Houses. This is a problem which will have a very great deal of interest for very many people. Not all those who wish to live in mansions can do so — the great majority must house themselves from limited means. If we seek to improve the architecture of our country-side we shall find a fruitful field in the development of the small house along rational lines, depending for the element of beauty upon the designer's ability to treat the problem with intelligence and skill. It is hoped that the results of this Competition will help to point the way to a better class of moderate cost houses to the end that here in America we shall become possessed of a domestic architecture which in its simple beauty will compare favorably with the best that Europe has to offer.

To summarize and emphasize the requirements, — this Competition calls for a Small Brick House, the cost of which is not to exceed $4,000.

CONSTRUCTION: There are no restrictions as to general type of construction except that the exterior walls are to be built of brick.

DRAWING REQUIRED (there is to be but one):

On one sheet a pen and ink perspective, without wash or color, drawn at a scale of 4 feet to the inch. Plans of the first and second floors at a scale of 8 feet to the inch. A sketch showing detail of front entrance. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit. The plans are to be blocked in solid. A graphic scale must accompany the plans. The brickwork must be clearly shown on the perspective and detail. Make or style of brick is not to be mentioned on the drawing.

The size of the sheet is to be exactly 24 inches by 18 inches. Strong border lines are to be drawn on the sheet 1 inch from edges, giving a space inside the border lines 22 inches by 16 inches. The sheet is to be of white paper and is not to be mounted.

The drawing is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawing is to be delivered flat, or rolled (packaged so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before June 1, 1910.

Drawings submitted in this Competition are at owner's risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five members of the architectural profession.

In making the award the jury will not consider those designs which obviously would cost more to execute than the limit set, $4,000. With this limitation, excellence of design will be given first consideration, and plan second.

Drawings which do not meet the requirements of the program will not be considered.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

For the design placed first there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This Competition is open to everyone.

The prize and mention drawings will be published in THE BRICKBUILDER.

Competition Program—Small Brick House—Page 110

THE BRICKBVILDER AN ARCHITECTVRAL MONTHLY

VOL. 19

APRIL 1910

NO. 4

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Advertisements will be printed on cover pages only.

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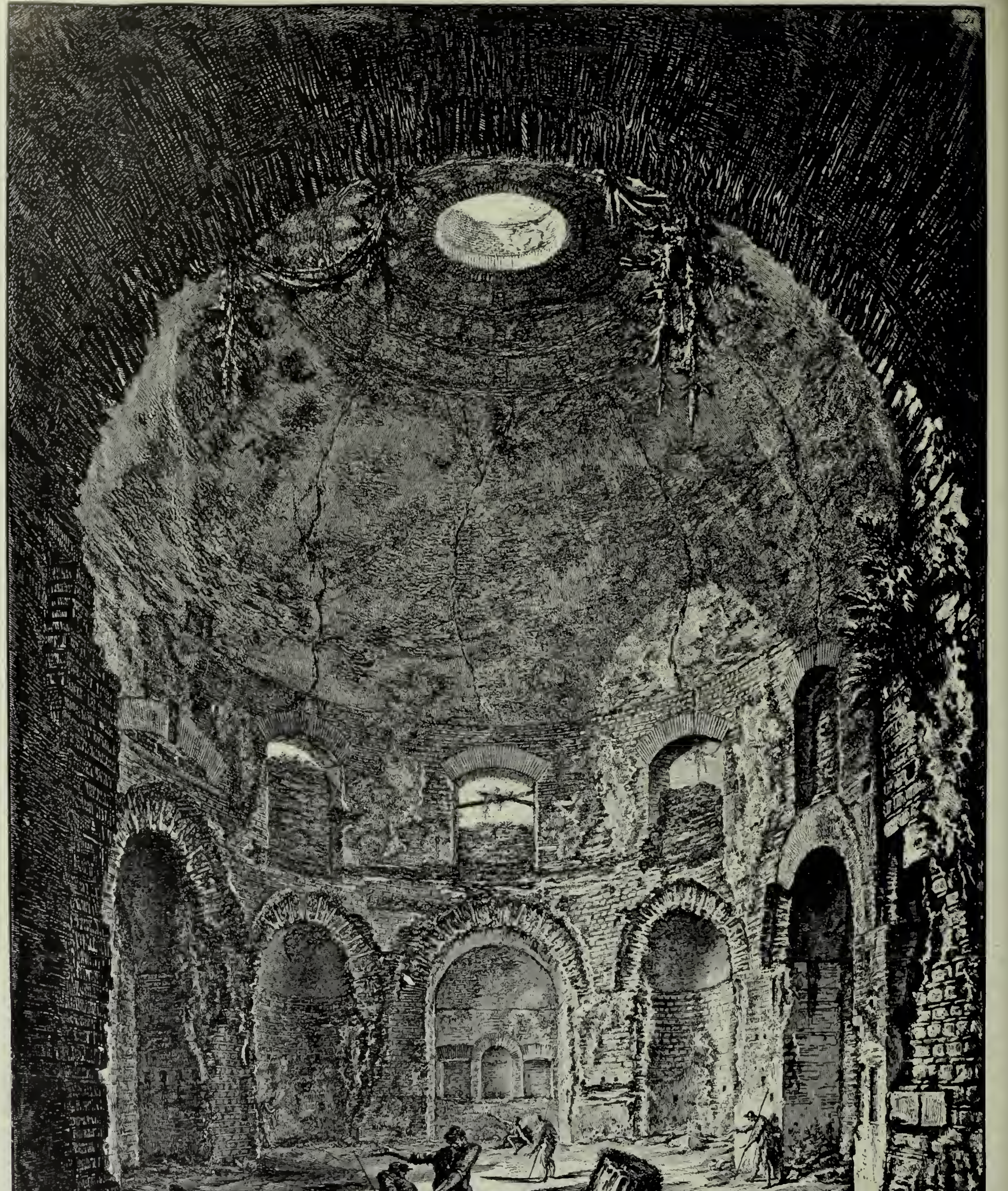
PLATE ILLUSTRATIONS

FROM WORK BY

GARBER & WOODWARD; ABRAM GARFIELD; JANSSEN & ABBOTT;
ALBERT KAHN, AND ERNEST WILBY, ASSOCIATED;
A. F. ROSENHEIM; HOWARD VAN D. SHAW.

LETTERPRESS



VIEW OF THE INTERIOR OF THE "TEMPIO DELLA TOSSE," NEAR TIVOLI.

GIOVANNI BATTISTA PIRANESI, DEL.

The interior of the "Tempio della Tosse" forms a single impressive vaulted chamber, with a row of niches springing from the floor, above these a row of windows and in the center of the vault a circular opening somewhat resembling that of the Pantheon in Rome. There are traces of Christian paintings which make it seem probable that at some time the building must have been used as a church. The construction consists of layers of small fragments of tufa, alternating with courses of bricks, which places its date probably in the fourth century A.D.

THE BRICKBUILDER

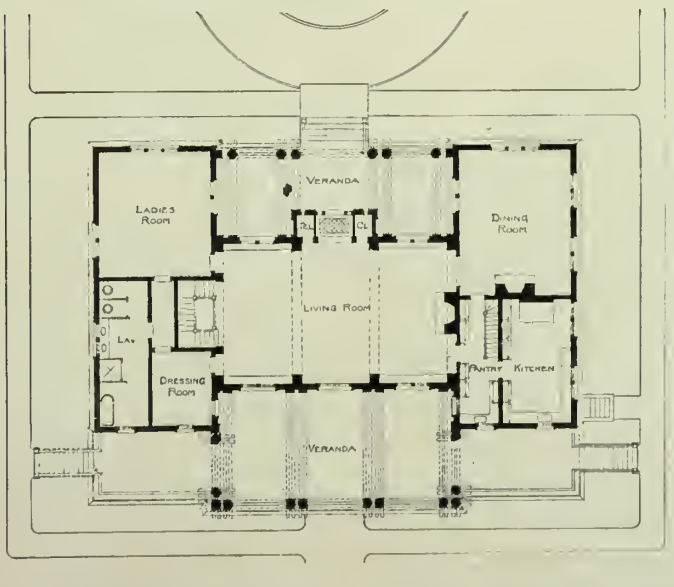
VOL. XIX. NO. 4. APRIL, 1910.

Country and Other Types of Club Houses.

BY ROGER DURAND.

A STUDY of the country club house as found in this country reveals the fact that there are comparatively few which seem to present the best ideas, considered architecturally. Very many of the best known are merely old houses remodeled and added to as circumstances have required. Certain features in the plan seem to have been accepted as fundamental and the larger establishments differ little in this respect, especially those which provide accommodations for both men and women and at times their children. The style of architecture ranges from the classic to the rustic, although the bungalow type seems to have been first called upon to minister to the needs of the golf club. More and more the country club house is becoming popular as a place of rendezvous during the winter months. Tobogganing, snow-shoeing, skeeing, skating, ice game, and even golf serve to lure members into a closer communion with nature. Dinner parties and dances add to the sum total of enjoyable winter features. A plan which amply accommodates the activities of summer will serve satisfactorily the needs of winter provided a good heating system has been installed.

SAEGKILL GOLF CLUB, YONKERS, N. Y.
Edw. Pearce Casey, Architect.



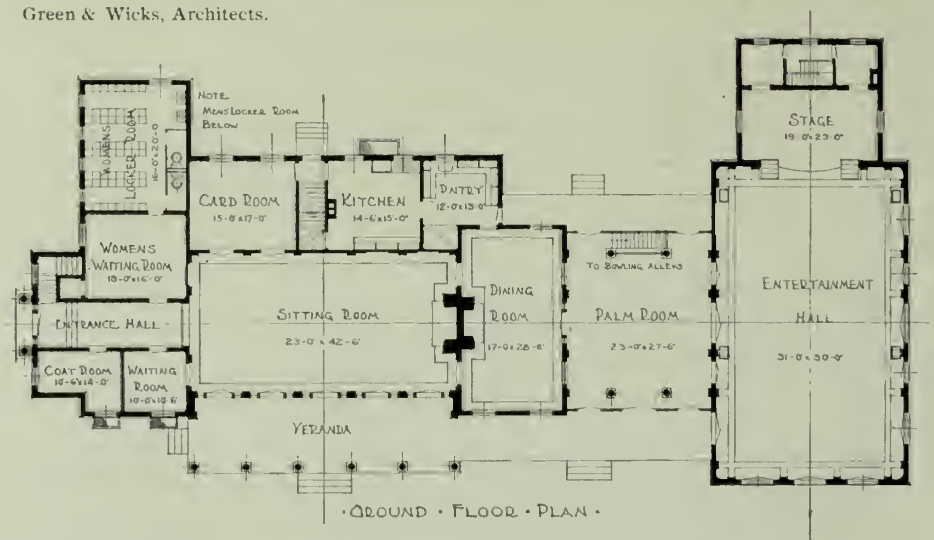
Quite naturally the highest ground — if it is not too far from the roadway — is selected to build upon, and if a golf course is to be provided the first tee should be near the house and the last hole near the entrance to the locker rooms.

Since nearly all outdoor sports require that players be provided with locker rooms and showers, these accommodations are almost always found in the basement, as will be seen by reference to the accompanying plans. Most kitchens are provided for in the basement, although a few are located in wings; this seems undesirable, however, for usually all of the main floor is needed for general club purposes, and it is especially desirable that at least one long side of the house have a broad veranda running its whole length to be used for the grouping of tables, dancing or a promenade. The growing tendency to provide roof gardens for country club houses makes it inadvisable to locate the kitchen above the first floor.

It would be a different matter to lay down a formula which would be safe to follow in planning a country club house. Everything depends upon the character of the membership and the purposes in general of the club. In the selection of examples to illustrate this article it has been the aim to get variety. The plans should meet in an easy way the needs of to-day, and in a measure at least anticipate the needs of to-morrow, for one form of recreation follows closely on the heels of another, and the end is not yet.

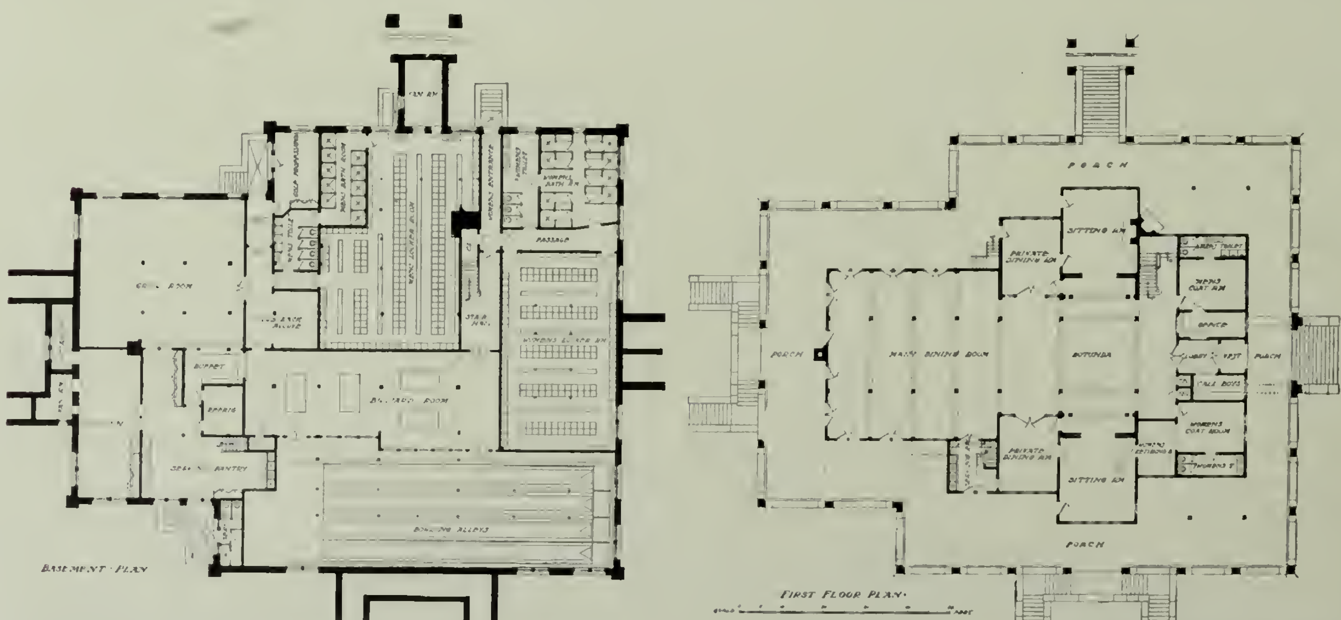
A building of the type under discussion is rarely ever of expensive construction, and yet it needs to be absolutely weatherproof, especially if it is made use of during the winter months, and it is highly desirable that it shall be in a large measure fireproof. The club house at Yonkers by Mr. Casey seems to meet in a most satisfactory way the structural requirements, and it will be observed that the cost per cubic foot does not exceed that of other types of construction. The work which has been selected to illustrate this article and the accompanying descriptions will best serve to show modern practice in building country and a few other types of club houses.

HAMILTON COUNTY COUNTRY CLUB.
Green & Wicks, Architects.



Country Club, Cleveland. Abram Garfield, Architect. Plates 56, 57, 58. The building is located about seven miles from the center of the city on the shore of Lake Erie. The main surfaces of the exterior are light gray plaster on brick, with openings and corners turned by brick quoins. The cornices, columns and other minor details are executed in wood painted a cream color. The exterior of each long façade is provided with a covered piazza, while the center of the building on the side of the approach is marked by a porte-cochère of piers and columns.

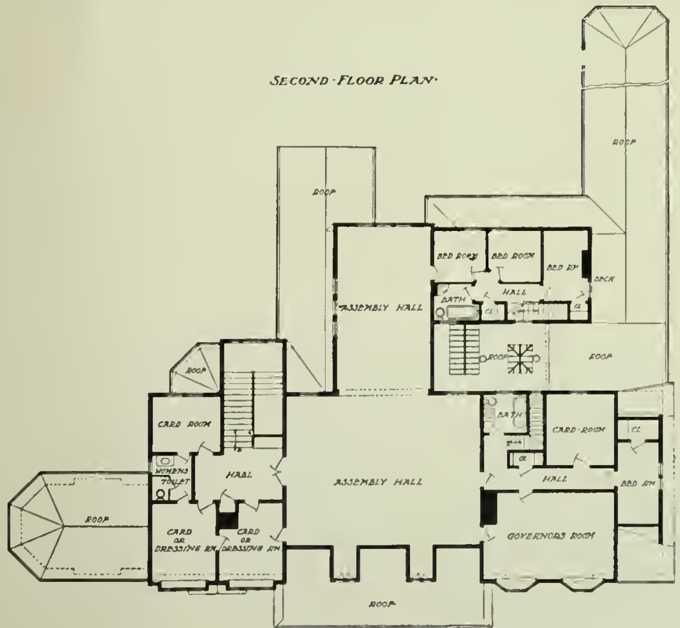
The entrance to the main hall from the south side is rather informal, while the hall itself is treated with a simple fluted order, and furnished in keeping. This hall forms the circulation

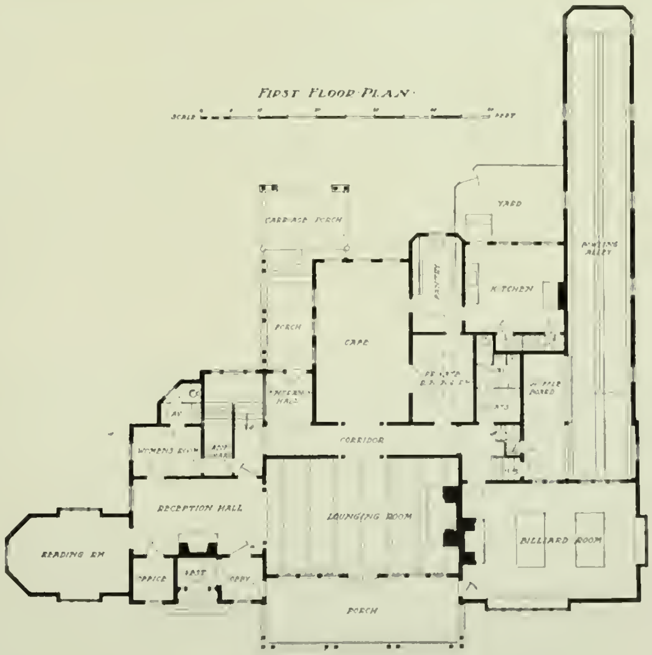


THE ATHLETIC COUNTRY CLUB, ATLANTA, GA. Harry Leslie Walker, Architect.

between the ball room on the right, and the living room on the left, which in turn opens into the main dining hall. These three principal rooms all open towards the lake on the north and the approach on the south. The ball room is decorated with a lattice motive on the flat surface, in conjunction with an enriched fluted order, the general impression of the color being white and lavender. The living room and dining room count as one long room, planned for the exclusive use of the men members, is the grille room, treated in gray green oak, with a fireplace of red brick and stone. To the south of this room is a large semi-circular covered terrace furnished with tables and used in connection with the grille room during the warm season. Under the grille room are the baths and locker room for men, well lighted, as the ground on this side of the building falls away rapidly to the water. The lock-

OTOWEGA CLUB, BUFFALO, N. Y.
Green & Wicks, Architects.



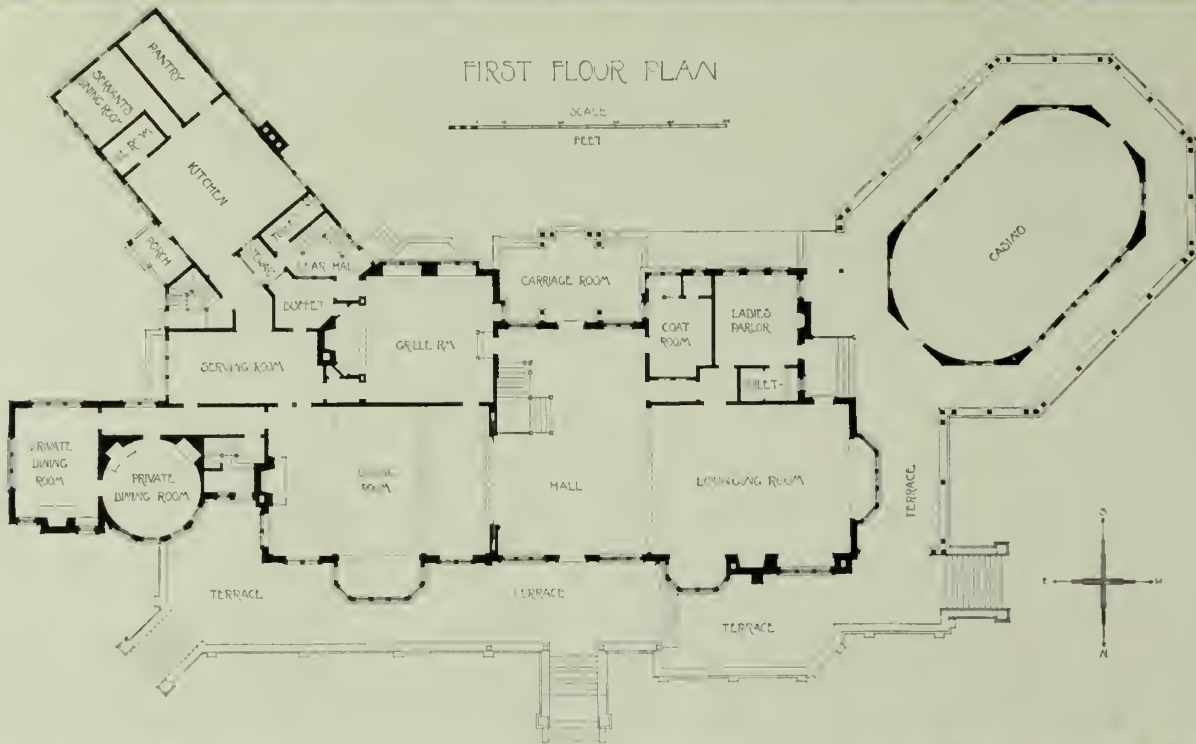


being separated by a simple order, with the woodwork of both rooms in cream-white and the walls decorated in harmony with the trimming. An attractive feature of the ladies' coat room consists in a frieze, just above the coat hooks, of female figures about one foot high, painted in oil, and illustrating the costumes and toilets of different historical periods. The staircase opposite the entrance of the main hall leads to a second floor gallery, the square well opening into the hall below.

On the first floor of the southwest wing, which is

ers used are of the open wire type and are generous in size and conveniently arranged.

Directly above the grille room is the men's lounging room, especially pleasing in its meager decoration; the walls conforming to the roof line, and the surfaces treated structurally, suggesting timber work, pegged together, with plaster between. In addition to the baths and locker rooms for men, the basement provides for waiters' quarters, wine room, storage rooms, professional shop, etc.

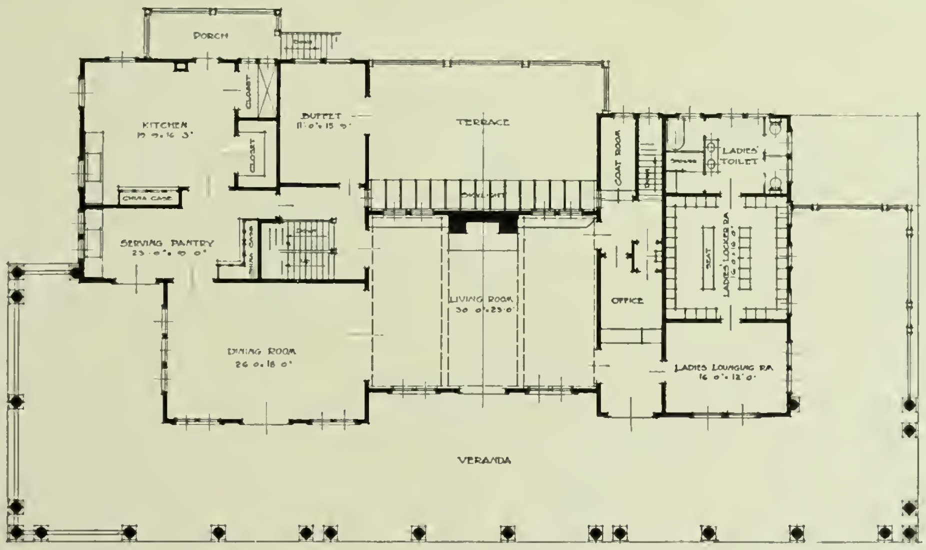


EUCLID CLUB, EUCLID HEIGHTS, CLEVELAND.
Meade & Garfield, Architects.

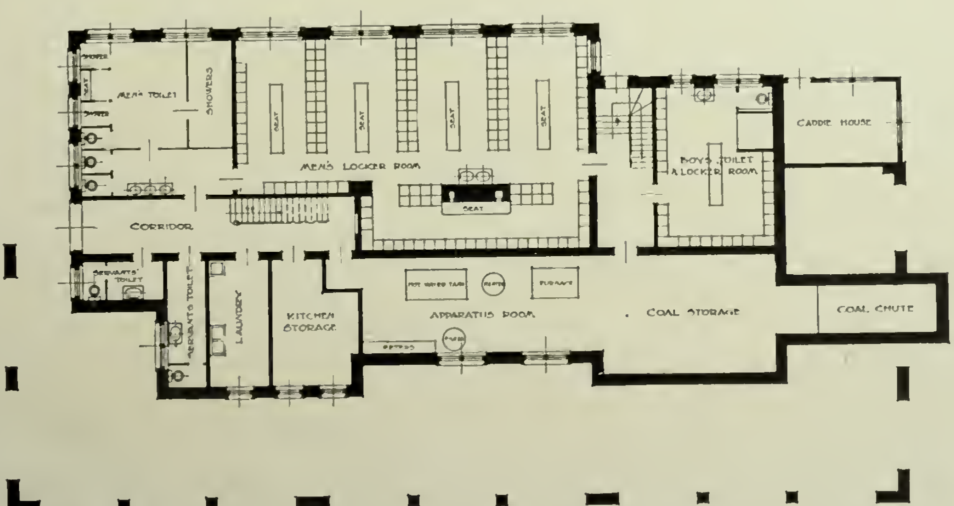
THE LOSANTIVILLE COUNTRY CLUB, CINCINNATI. Tietig & Lee, Architects.

The complete cost of the building was $233,000. The cube, taken from the top of the basement floor including the roof space and one-third of the porches, is 990,000 cubic feet, making the cost approximately 24 cents per cubic foot.

Club House, Wyoming, Ohio. Garber & Woodward, Architects. Plate 45. The building is located in the heart of the village on an area capable of accommodating tennis courts and other necessary athletic grounds. It is designed to meet the general needs of the people of a small town. In connection with the club rooms the building association and village council have quarters set aside for their use. And in addition to this, arrangements have been made on the ground floor for space devoted to library purposes. The exterior is treated in buff brick with a rough surface which gives it considerable texture. The cost of the building per cubic foot was 13 cents.



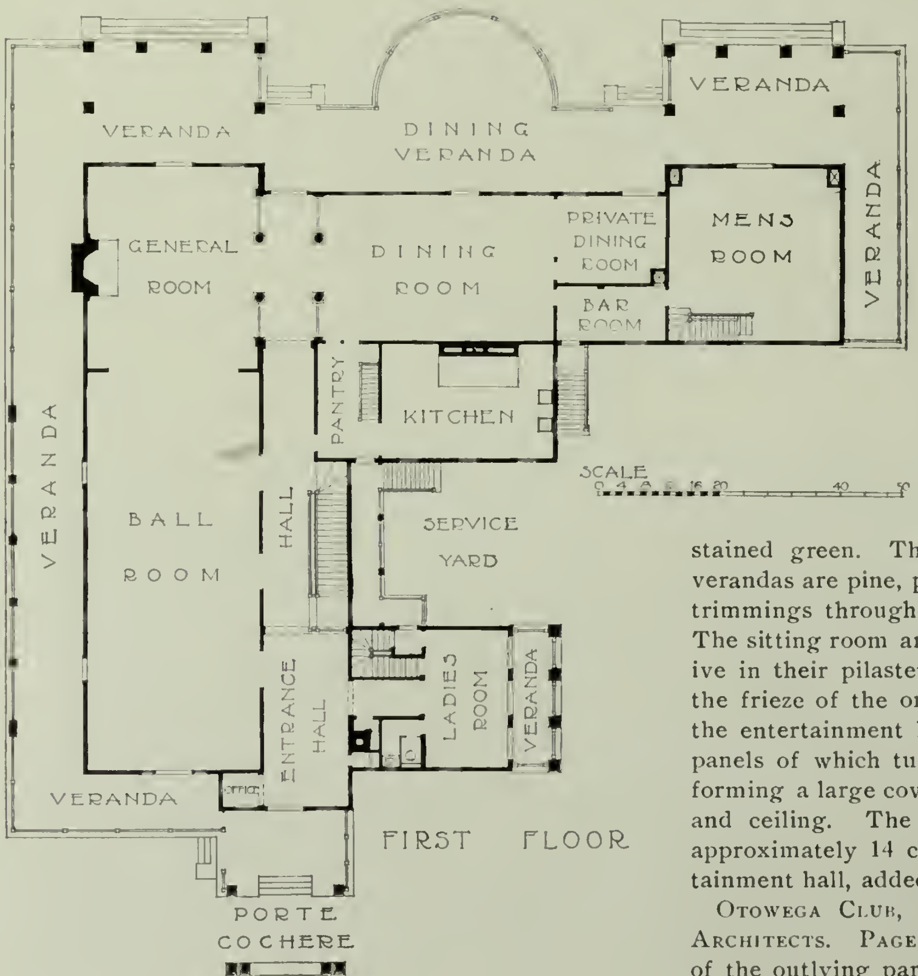
FIRST FLOOR PLAN.



BASEMENT PLAN.

Saegkill Golf Club, Yonkers, N. Y. Edward Pearce Casey, Architect. Page 89. The building stands but a short distance back from North Broadway, Yonkers, on the edge of a hill overlooking a wide and extensive valley in which the golf links are located. The main entrance is on the Broadway side, directly upon an open veranda, while on the opposite side is a covered veranda

MOHAWK GOLF CLUB, SCHENECTADY, N. Y.
William Welles Bosworth, Architect.



which affords an excellent view of the whole valley. Underneath the covered veranda are located the men's lockers in addition to toilet and bath facilities. The upper story accommodates a large number of bedrooms and the servants' quarters. A worthy feature in connection with the planning is the service facilities from the kitchen, which has been conveniently arranged in respect to the dining room, the living room, and the veranda. The exterior walls are built of 8 inch hollow terra cotta blocks laid flat. The plastering upon the exterior as well as upon the interior is placed directly upon the terra cotta blocks. The cost of the building per cubic foot was approximately 18 cents.

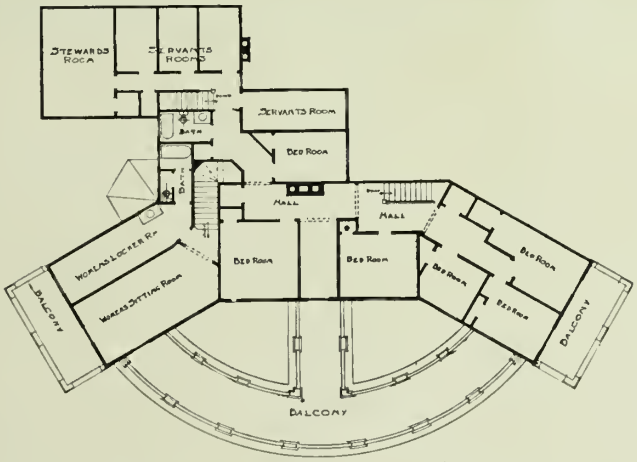
Hamilton County Country Club, Olean, N. Y. Green & Wicks, Architects. Page 90. The building is situated on the side of a hill overlooking a vast stretch of undulating country, in which is located the town of Olean. The exterior finish consists of shingles stained green. The columns, bases, caps, etc., of the verandas are pine, painted white. Upon the interior the trimmings throughout are of cypress in a natural finish. The sitting room and entertainment hall are very effective in their pilaster treatment with both the base and the frieze of the order treated plainly. The ceiling of the entertainment hall consists of a beamed design, the panels of which turn down to meet the frieze, thereby forming a large cove at the angle between the side wall and ceiling. The cost of the original building was approximately 14 cents per cubic foot, while the entertainment hall, added later, cost 9 cents per cubic foot.

Otowega Club, Buffalo, N. Y. Green & Wicks, Architects. Page 91. The building is located in one of the outlying park districts of the city, commanding an excellent view of the surrounding country. The exterior treatment is in brick, wood, and plaster. The color scheme is in perfect harmony with the general

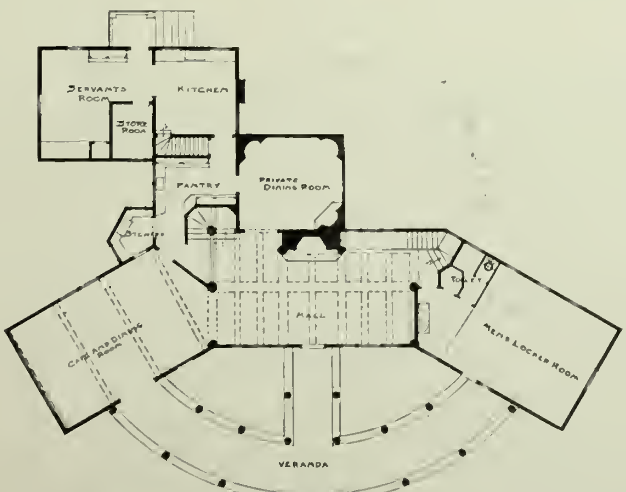
GOLF CLUB, HACKENSACK, N. J. Rossiter & Wright, Architects.

surroundings, the brick being dark red, the half timber work of chestnut in a natural finish, and the plaster of a gray tone. The interior is of cypress finish throughout. The lounging room, which has a very imposing fireplace at one end, is featured by a row of French windows leading to the enclosed veranda. The cost of the building per square foot was $2.07.

Euclid Club, Euclid Heights, Cleveland. Meade & Garfield, Architects. Page 92. This building is treated in brick laid up in Flemish bond with wide joints of colored mortar. The half timber work is of cypress, while the plaster effect is of soft gray brown. Upon the interior the grille room is finished in oak with the floor of tile. The other rooms on the first floor are finished in cypress with floors of oak. Throughout the second floor pine has been used for all the woodwork, and all bedrooms are finished in white. In addition to the ten bedrooms and a large linen room the second floor accommodates a men's locker room with over two hundred lockers, in addition to a women's locker room with one hundred lockers. In connection with the locker rooms suitable arrangements have been made for bath and toilet facilities. There is provided also an extra room to accommodate any future need for lockers.



PLAN OF SECOND FLOOR



PLAN OF FIRST FLOOR

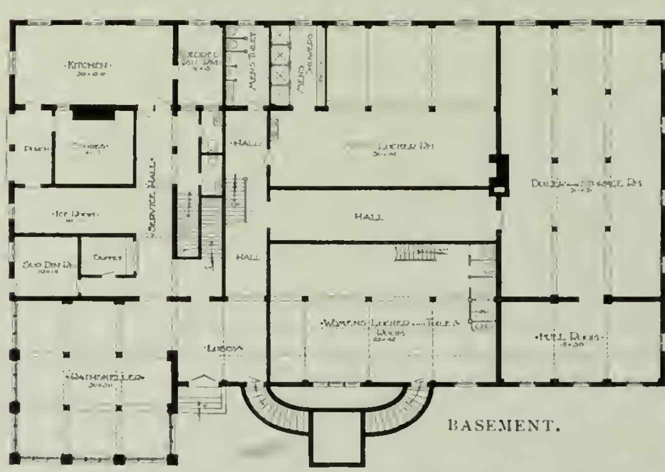
The Losantiville Country Club, Cincinnati, Ohio. Tietig & Lee, Architects. Page 93. The exterior is built with shingles stained a weathered gray for all wall surfaces, and a moss green for the roof. All trimmings are in white. The living room and dining room are wainscoted to a height of 6 feet and have a beamed effect for the ceilings. The living room, dining room, and ladies' lounging room, are finished in chestnut of selected grain. The fireplace of the living room is built of gray stone. The building is plastered throughout. Ample accommodations have been made on the second floor for bedrooms, which are equipped with large closets. This floor also accommodates two bath rooms and one shower bath. The cost of the building per cubic foot was 18 cents.

Mohawk Golf Club, Schenectady, N. Y. William Welles Bosworth, Architect. Page 94. The building stands upon a slight eminence affording a good view of the golf links. It is of frame construction with stucco of light buff color for the surface treatment. The wood trim is finished in browns, yellows, and black, and the shingled roof stained a dark brown. Upon the interior the floors of the first story are of maple, while those of the second story are of yellow pine. The cost of the building was $50,000, and approximately 18 cents per cubic foot.

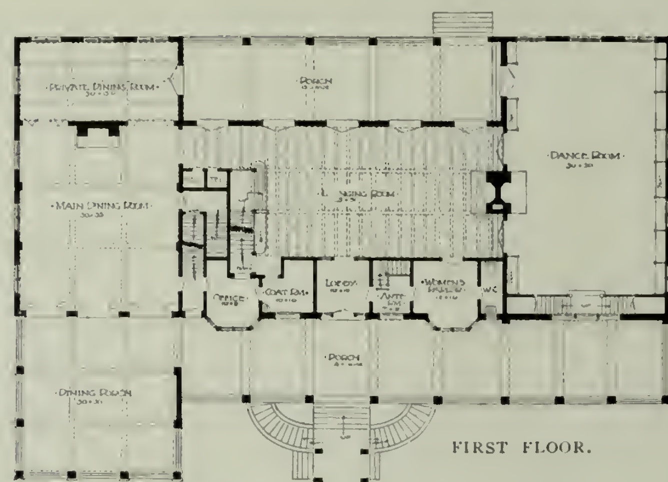
Golf Club, Hackensack, N. J. Rossiter & Wright, Architects. Page 95. The background of very deep foliage presents a suitable setting to this building with its walls finished in white stucco. The floors of the veranda are of tile. Upon the interior the walls are covered with canvas. Oak is used for the woodwork in the hall, which has a beamed ceiling and brick mantle. The private dining room is treated after the colonial period, and the café has a beamed ceiling and wainscot of cypress. The floors are of oak. The total cost of the building was $14,000, and approximately 16 cents per cubic foot.

COUNTRY CLUB, INDIANAPOLIS, IND.
Foltz & Parker, Architects.

Country Club, Indianapolis, Ind. Foltz & Parker, Architects. Page 96. The building is located on the bluffs overlooking White River, and commands a wide view of the river valley. An attractive feature is the long carriage drive from the gate to the club house, winding through thick groves of fine old sycamore, beech, and walnut trees. The building furnishes a very good example of brick and half timber construction. From the veranda, through the lobby, the lounging room is reached. This room is decorated in soft tones of green and brown. The ceiling treatment consists of heavy open beams, with groups of soft-shaded lights suspended at intervals. The windows are arranged in pairs, and at one end of the room



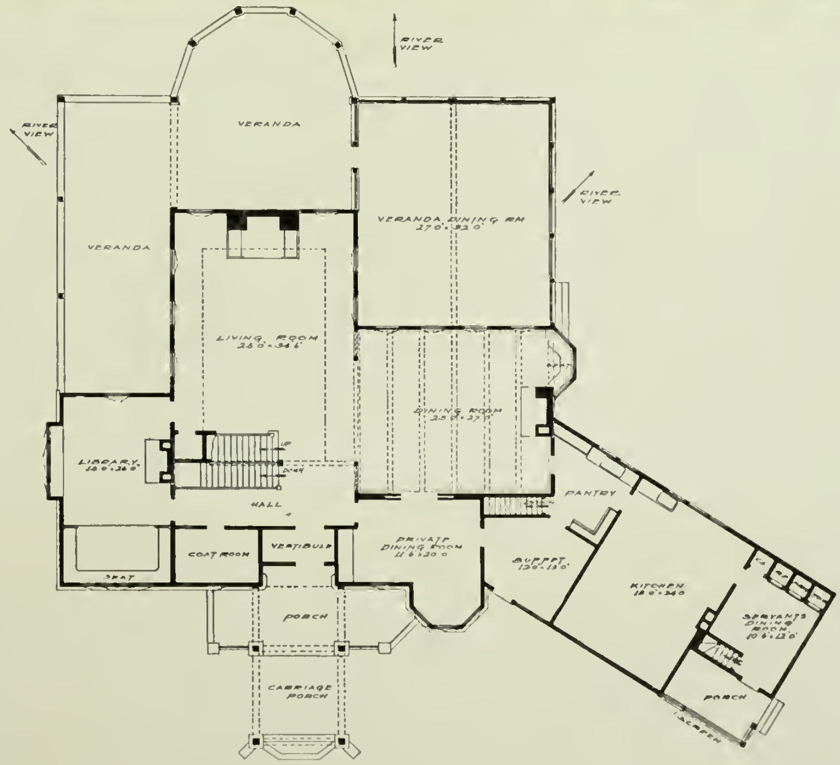
BASEMENT.



FIRST FLOOR.

LOUNGING ROOM.

COUNTRY CLUB, PEORIA, ILL.
Herbert Edmund Hewitt, Architect.



•FIRST•FLOOR•PLAN•

two sets of them flank a picturesque fireplace of rough stone. Encircling the room, broken here and there by windows, fireplace, and doorways, runs a border of hunting scenes in color, below which the walls are divided into panels about a foot wide in woodwork. The main café opens on a porch 30 feet square, which in summer is used for dining purposes. The dining rooms, and all other rooms in the house, have open-beam ceilings like that of the lounging room, and their wall decorations effect a natural harmony throughout. The woodwork is of southern pine and chestnut, stained in soft greens and browns.

On the second floor are the sleeping and bath rooms for the use of members. The kitchen, cold-storage, service rooms, locker and shower rooms, are located in the basement, with a large Rathskeller under the dining porch; while the servants' quarters and those of the instructor are in separate buildings. The grounds comprise over fifty acres, and give ample space for a golf course and tennis courts, as well as for a stable, and sheds spacious enough for the storage of vehicles and motors.

This building was erected at a cost of $29,000, exclusive of furnishings. Figuring from the bottom of the footings to a height of 6 feet above the attic floor, it cubes 273,110 cubic feet, making the cost per cubic foot 11 cents.

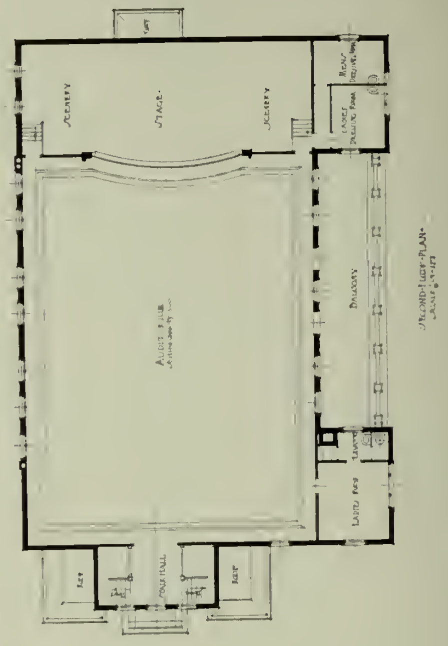
Country Club, Peoria, Ill. Herbert Edmund Hewitt, Architect. Page 97. The building is situated on the edge of a bluff overlooking the Illinois River, and the plan was largely determined by the site. The interior is finished in selected yellow pine, stained dark and waxed. The living room is open to the roof, with a gallery extending on all sides. This gallery has two exits into the main corridor of the second floor as well as opening onto a large veranda. The living room, dining room, and veranda dining room, can be thrown together for dancing. The second floor provides for the steward's quarters, four bedrooms, a dormitory, women's locker room, toilets, etc. The basement contains the men's locker room, showers, etc., and Rathskeller under the polygonal veranda.

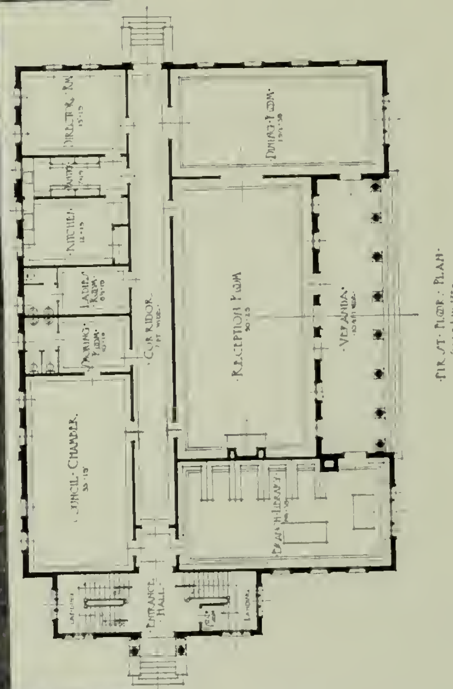
This building cost about $15,000.

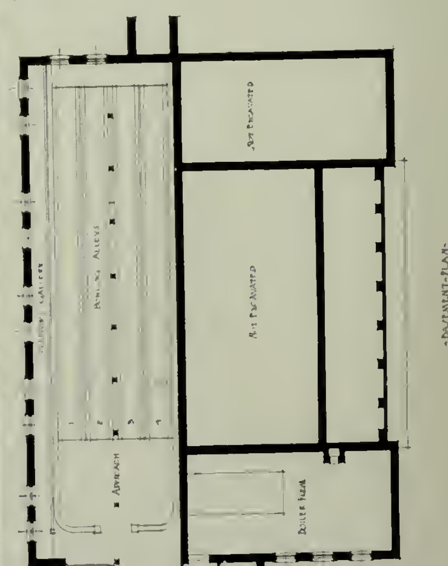
WOMAN'S CLUB, EAST ORANGE, N. J.
Ernest Greene, Architect.

WOMAN'S CLUB BUILDING, EAST ORANGE, N. J. ERNEST GREENE, ARCHITECT. PAGE 98. As indicated on the plan, the building has two main divisions which are clearly expressed by the exterior treatment. The principal entrance lies between these two sections, thereby affording an easy access to both. The exterior is of dull red brick. The large assembly hall is in light tones with the woodwork painted to harmonize. An unusual feature is the foyer carried around on each side with columns only between it and the large hall. This foyer is used for a promenade and at the same time provides for a number of exits. The stage is built with movable sides and top, which can be swung out of the way when it is required for purposes other than entertainments. The basement provides suitable apartments for the janitor, and kitchen and serving rooms for the use of caterers. The building completed cost approximately $44,000.

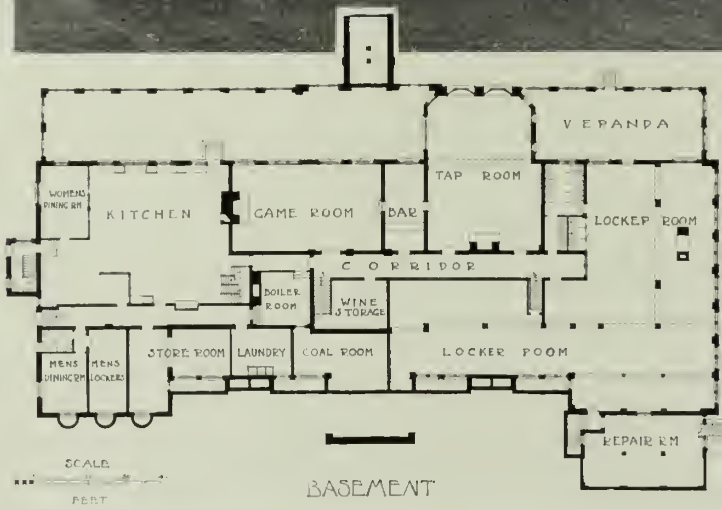
CLUB HOUSE, YORK HARBOR, ME. JAMES PURDON, ARCHITECT. PAGE 99. This club house has a commanding outlook, built as it is on a rocky bluff close by the sea. The exterior is treated in plaster-stucco, together with pine trimmings stained a soft brown with roof finished in moss green shingles. Casement windows with small panes of leaded glass have been used throughout. The interior is treated in pine boards, rough-sawn, giving the effect of a silvery gray tone, while the furnishings are of dark green which harmonize perfectly. At one end of the main living room there is a large fireplace, of light stone, some 6 feet in height and 7 feet wide. The roof of this room is supported by arched trusses of pine with the same color effect as the rest of the woodwork. The writing room is several steps below the floor of the living room and contains a brick fireplace upon one side and a long window seat on the other. The broad piazza, which extends the whole length of the building and opens off the living room, faces the ocean The living room extends throughout the two stories. The second floor is planned to accommodate several card rooms in addition to the servants' quarters.







CLUB HOUSE, WYOMING, OHIO.
GARBER & WOODWARD, ARCHITECTS.

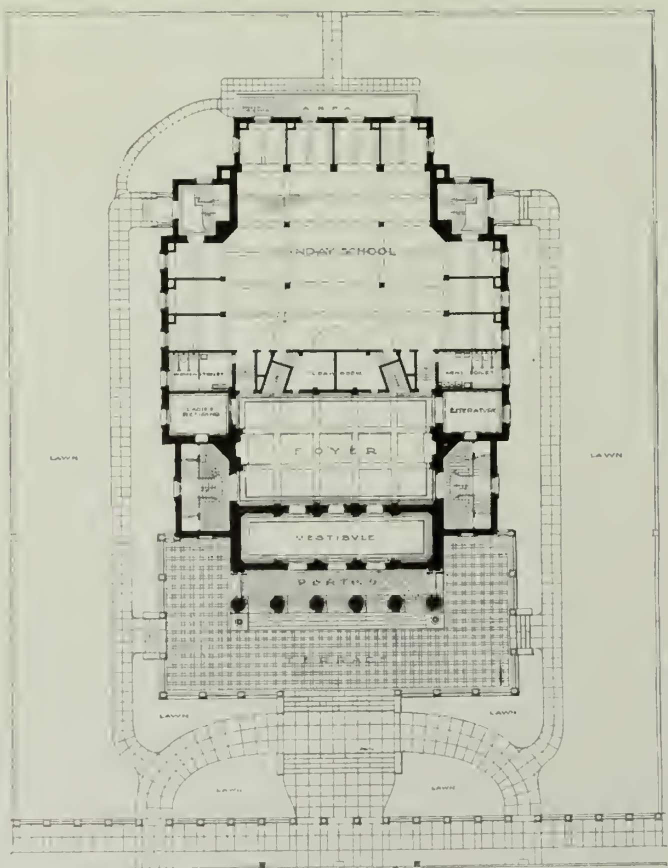


COUNTRY CLUB, DETROIT, MICH.
ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATED.

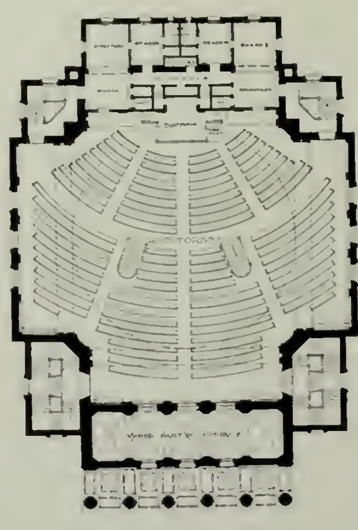
SECOND CHURCH OF CHRIST, SCIENTIST, LOS ANGELES, CAL.
A. F. ROSENHEIM, ARCHITECT.

SECOND CHURCH OF CHRIST,
SCIENTIST,
LOS ANGELES, CAL

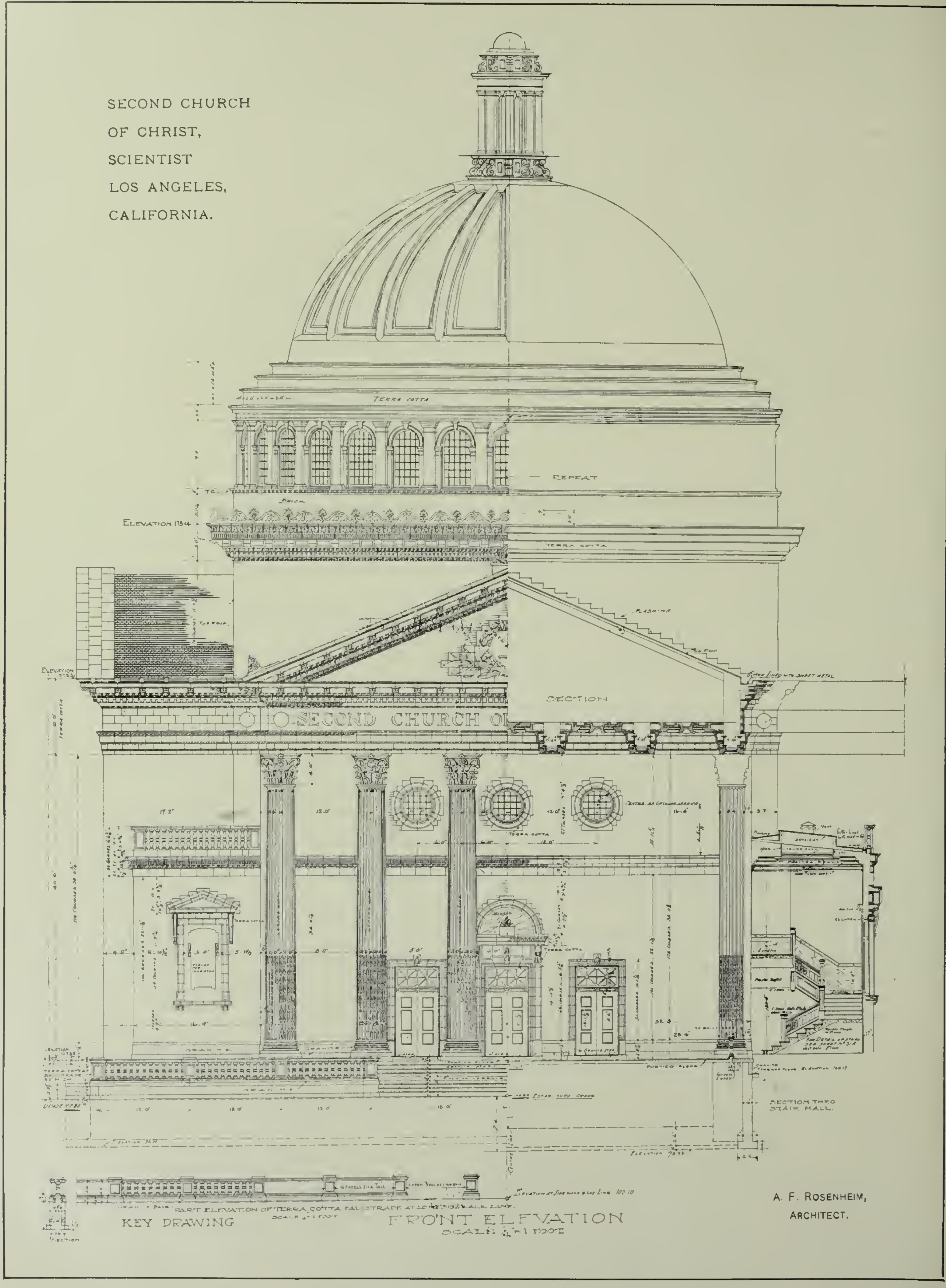
A. F. ROSENHEIM, ARCHITECT.

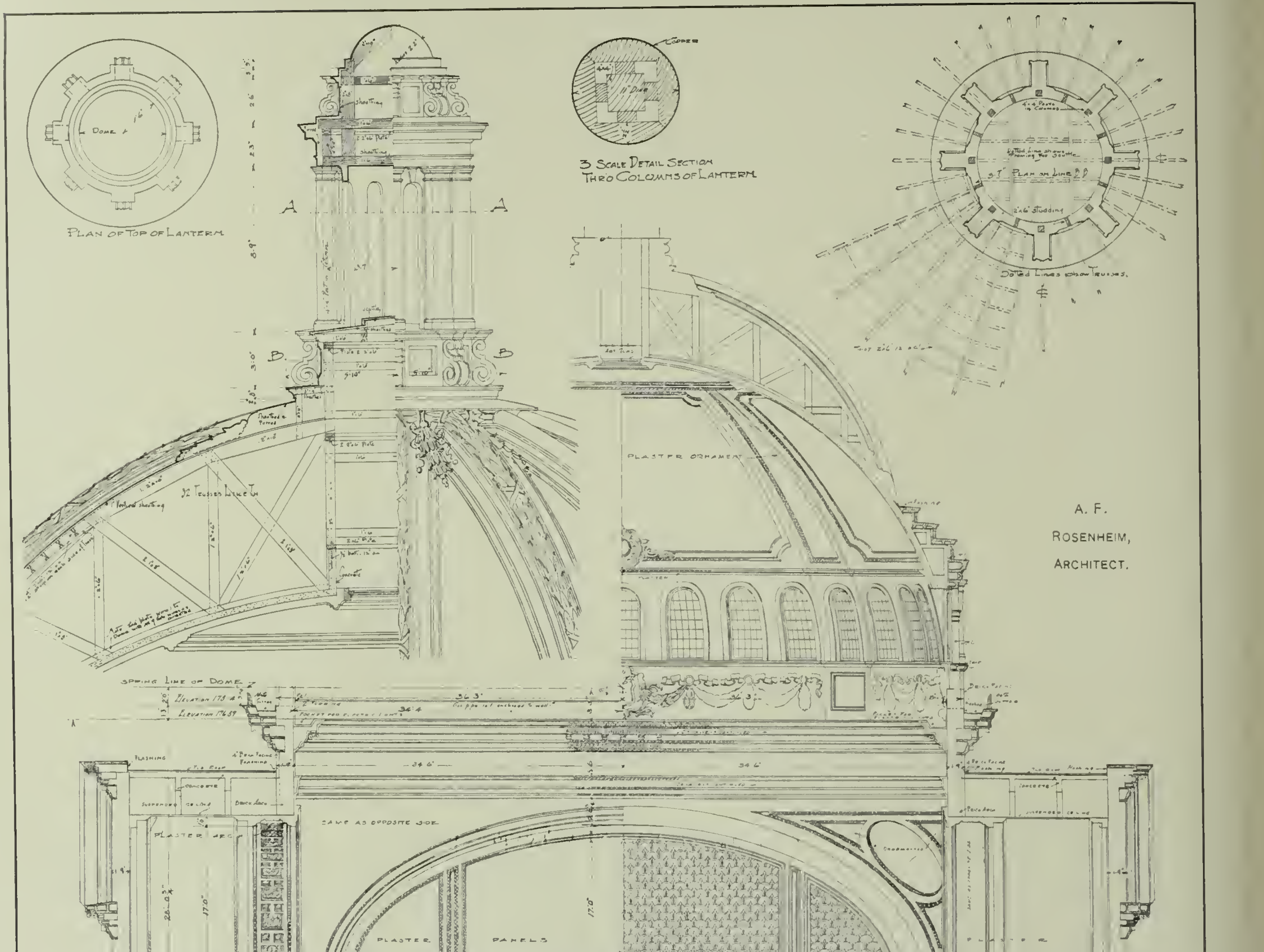


GROUND FLOOR PLAN.



AVDITORIVM FLOOR PLAN


SECOND CHURCH
OF CHRIST,
SCIENTIST
LOS ANGELES,
CALIFORNIA.
TERRA COTTA
REPEAT
ELEVATION 178.14
SECTION
SECOND CHURCH OF
SECTION THRO
STAIR HALL.
PART ELEVATION OF TERRA COTTA BALUSTRADE AT SIDEWALK LINE
KEY DRAWING
FRONT ELEVATION
SCALE 1/8" = 1 FOOT
A. F. ROSENHEIM,
ARCHITECT.



A. F. ROSENHEIM, ARCHITECT.

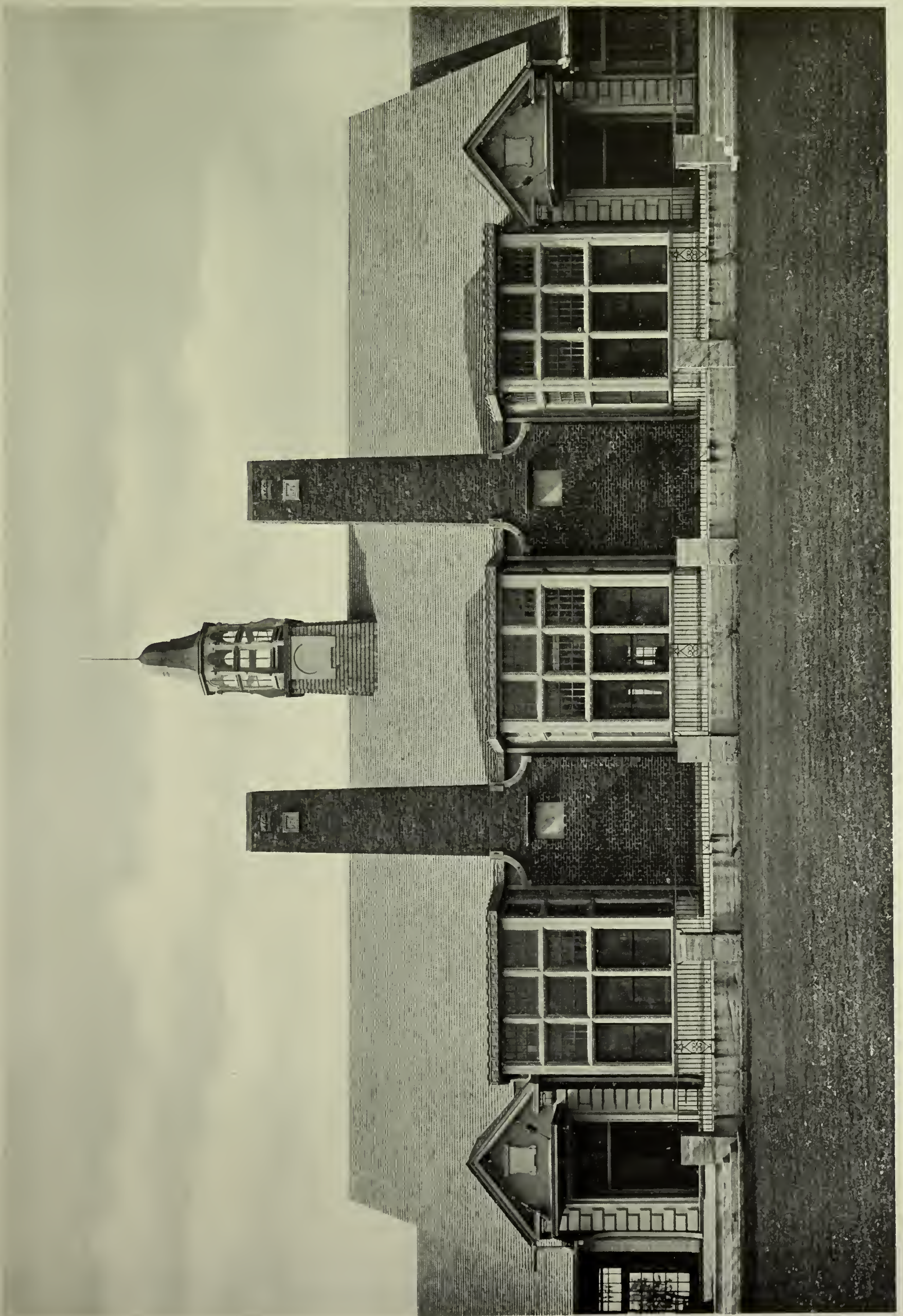
LOOKING TOWARD FRONT — CROSS SECTION — LOOKING TOWARD REAR

SCALE 1/4" = 1 FOOT

SECOND CHURCH OF CHRIST, SCIENTIST, LOS ANGELES, CAL.

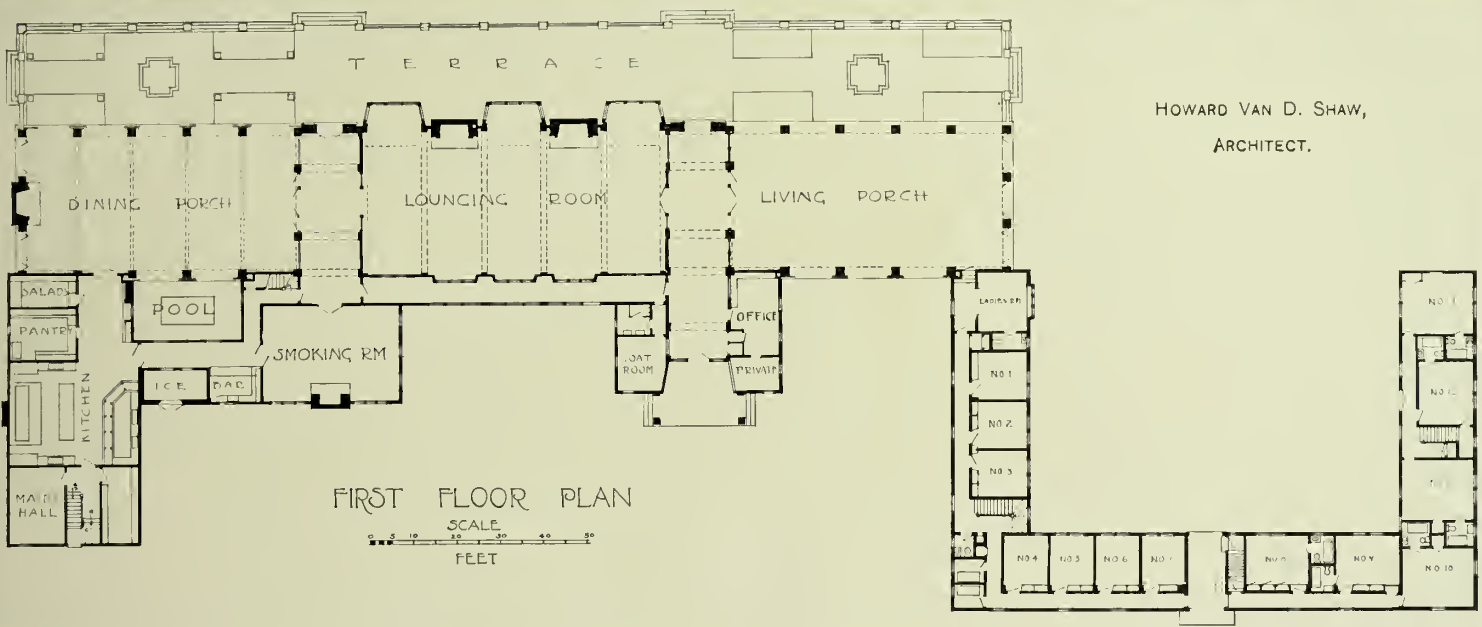
NORSE ROOM, FORT PITT HOTEL, PITTSBURG.
JANSSEN & ABBOTT, ARCHITECTS.

NORSE ROOM, FORT PITT HOTEL, PITTSBURG.
JANSSEN & ABBOTT, ARCHITECTS.



HOMEWOOD COUNTRY CLUB, FLOSSMOOR, ILL.

HOWARD VAN D. SHAW, ARCHITECT.

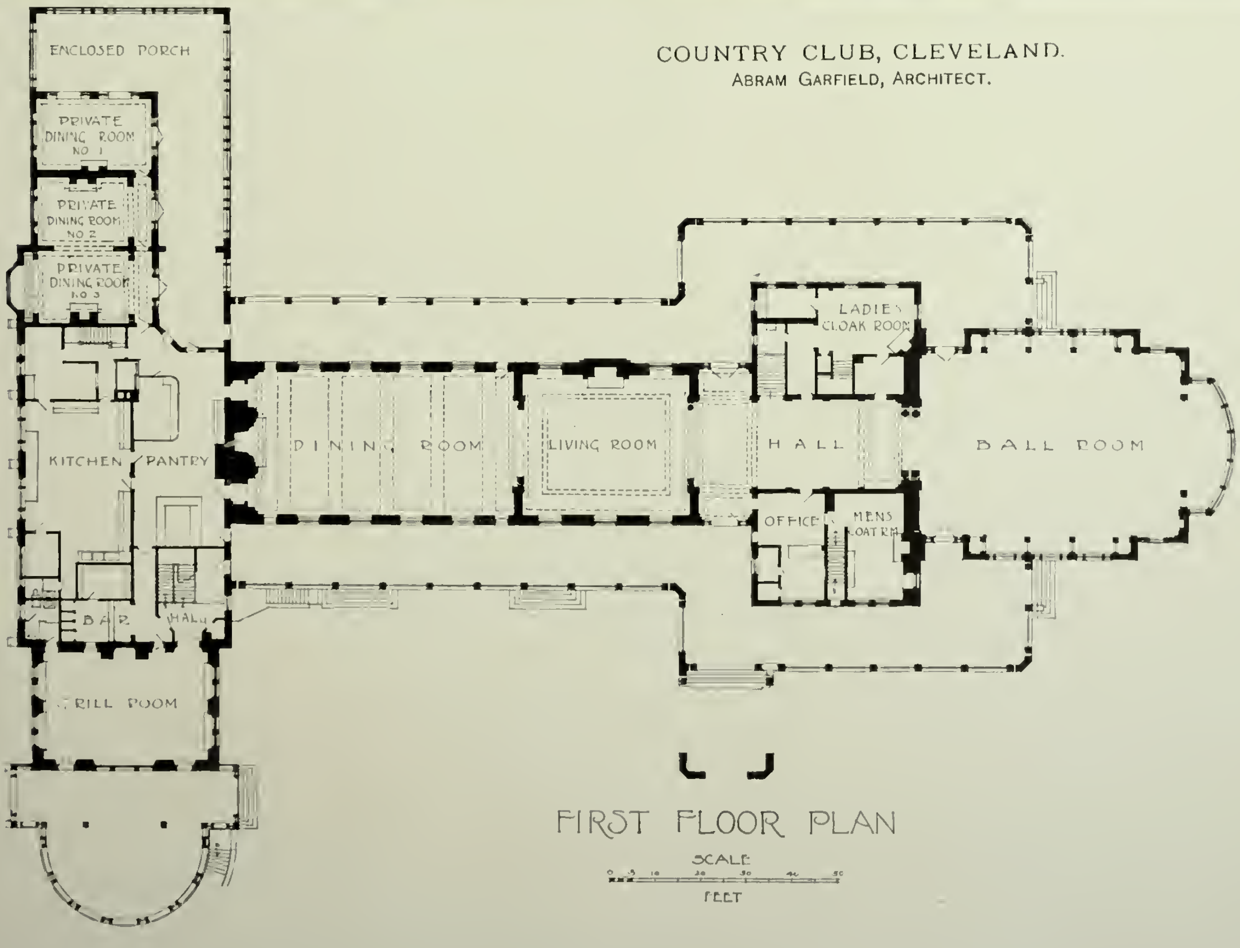


Howard Van D. Shaw,
Architect.

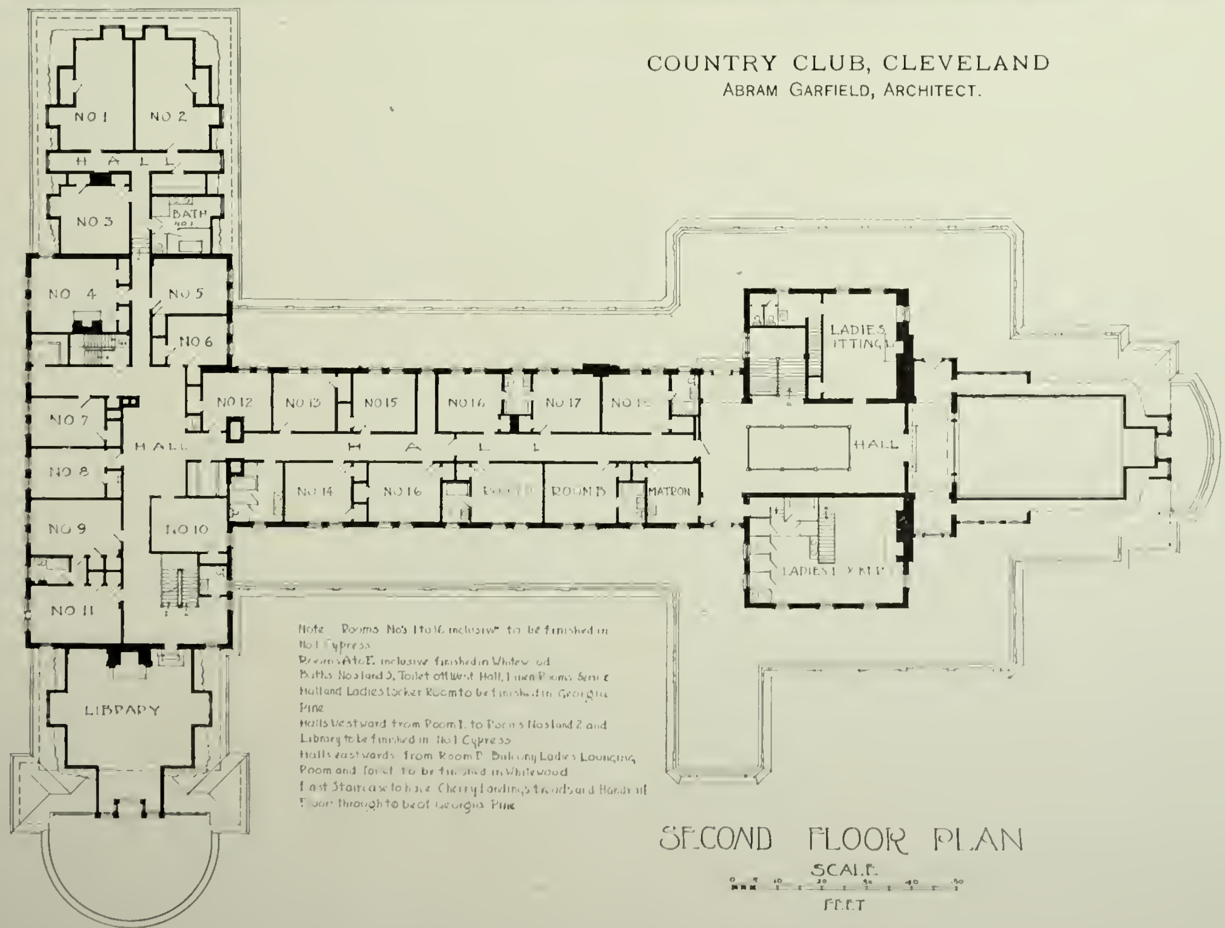
HOMEWOOD COUNTRY CLUB, FLOSSMOOR, ILL

INTERIORS, HOMEWOOD COUNTRY CLUB, FLOSSMOOR, ILL.
HOWARD VAN D. SHAW, ARCHITECT.

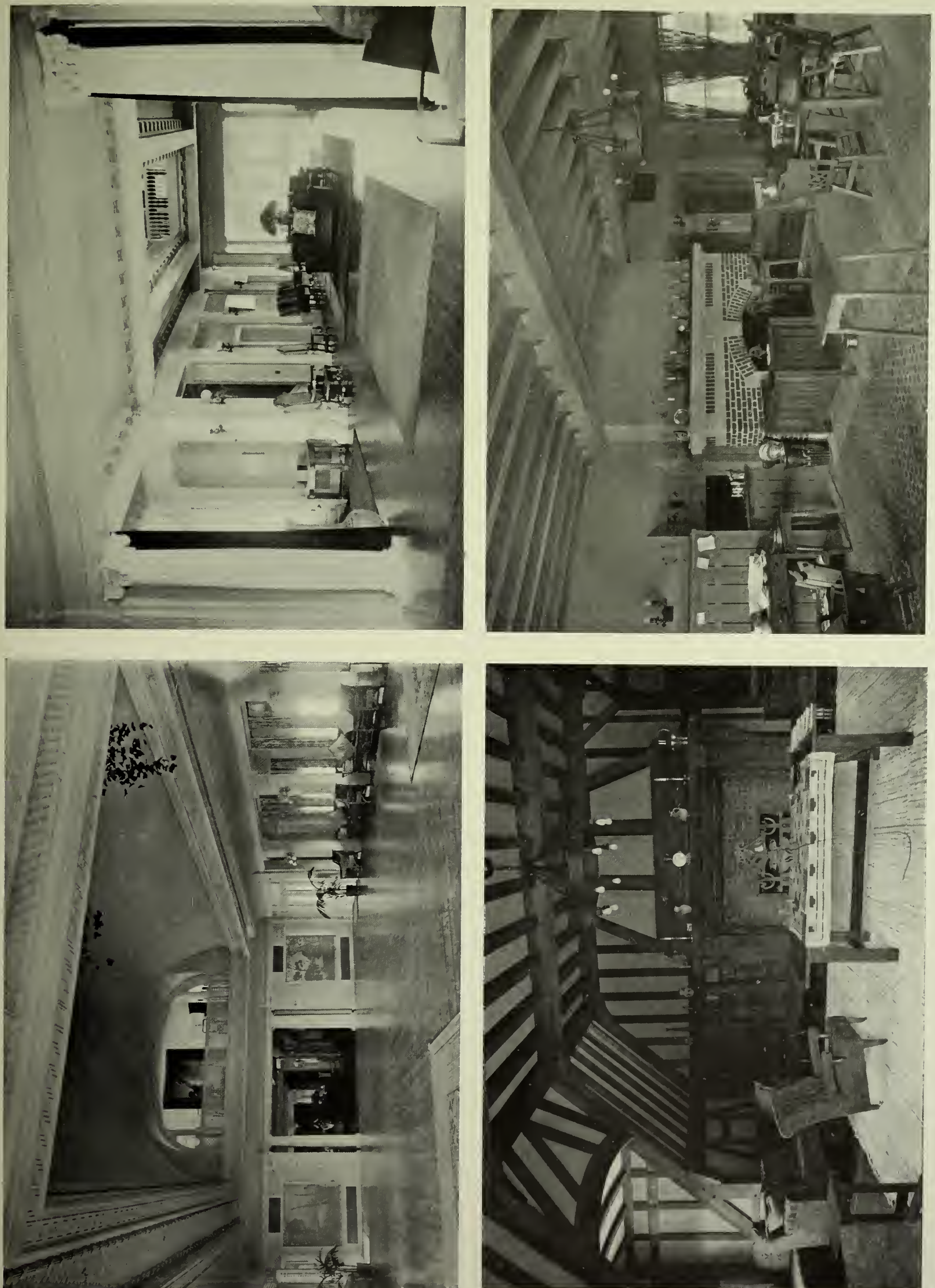
COUNTRY CLUB, CLEVELAND.
ABRAM GARFIELD, ARCHITECT.



FIRST FLOOR PLAN

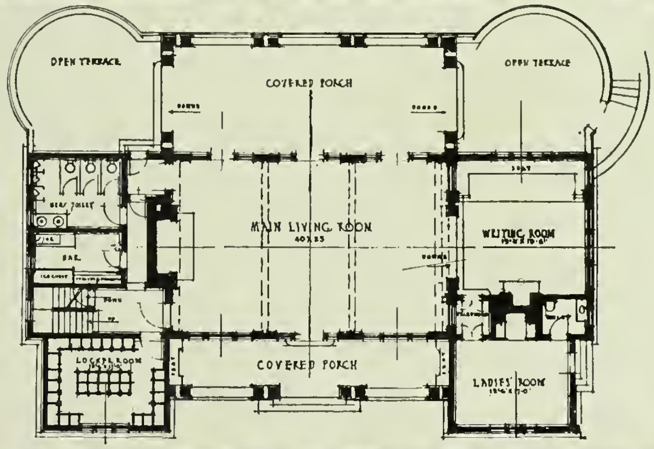


COUNTRY CLUB, CLEVELAND
ABRAM GARFIELD, ARCHITECT.



INTERIORS, COUNTRY CLUB, CLEVELAND.
ABRAM GARFIELD, ARCHITECT.

CLUB HOUSE,
YORK HARBOR, MAINE.
James Purdon, Architect.



In the basement suitable accommodations have been made for the kitchen with all its accessories, and the space necessary for heating. The cost of the entire building was approximately $18,500, and the cost per cubic foot was 36 cents. In cubing the building the distance was taken from the basement floor to one-half the height of the roof surface.

Country Club, St. Louis. Mauran, Russell & Garden, Architects. Page 100. The building stands with its long elevation to the south on a plateau which forms a terrace 100 feet wide, about 12 feet above the polo field which it thus commands. This "lay of the land" naturally suggested the sweep of the drive to the rear under the two-storied colonnaded porte-cochère. The chief feature of the high studded main hall is the musicians' gallery extending across the face of the chimney breast, above the ingle nook, and which is reached from the stair landing over the vestibule. Another successful feature of the plan is the semi-detached building which provides one large dressing room apart from the rest of the building. Beyond the parlor, and nearest to the gates of the club, is the ladies' room, with its separate entrance, where the women may go direct to their own quarters and baths by means of a private stair. At the other end of the house the men have a similar arrangement. On the second floor are found the separate sleeping facilities for the men and women, while suitable quarters have been arranged for the polo men over the billiard room. The three center bedrooms off the main hall and the two adjoining on the east may be used as family quarters. In addition to the bedrooms this floor provides for toilets, shower baths, lockers, etc. The steward's quarters and motor stand lie to the north of the club house, while the stables with the flanking carriage sheds forming a forecourt, extend to the west. The T shaped plan of the stable proper has box stalls on both sides of its center aisles, with accommodations for about sixty polo

MAIN LIVING ROOM.

The Norse Room, Fort Pitt Hotel, Pittsburg.

JANSSEN & ABBOTT, ARCHITECTS.

TO TAKE an old boiler room, low, grimy, and unbearably hot, in the basement of a building and convert it into a pleasant and agreeably cool grille room, is in itself not an easy problem. But to create under such difficult conditions a room full of the warmth and charm of daylight, where the sunlight never shines, and to give it an atmosphere cheerful and inviting, is a task beset with still greater difficulties. And yet this is precisely what has been done in the Norse Room of the Fort Pitt Hotel.

The way in which the designer has overcome these difficulties and indeed has made them minister to his scheme for producing such a room, is an admirable illustration of how an art is in a certain sense created by its limitations. Certainly in this case we are introduced to an achievement of remarkable beauty and originality. The artist has made full use of very unusual technical resources and has constructed with enduring and beautiful materials a room, memorable in the art of clay.

It seemed desirable, in order to produce interesting lines in the room, that the ceiling should be vaulted, and this feature has been well handled. A limited height being necessary on account of structural requirements, the flat Norman arch was used with ribs and centers richly ornamented with Norse interlacing designs, such as are seen in the old Norwegian carvings and runic inscriptions.

The ceiling proper consists of plain 3 inch tiles, through which are scattered tiles of the same size with modeled motifs, giving an agreeable variety to the surface.

As a motif for the panels — or mural paintings in faience — which fill the bays on the side walls, Longfellow's "Skeleton in Armor" was selected. These scenes, nine in number, are modeled in low relief and interpreted in a quaint, crude effect, quite in keeping with the spirit of the tale, and reflect the atmosphere of the old Norwegian Sagas — the wild life of the corsairs, the wassail bouts of viking chiefs, the grim sea battles, the flight of the cormorants across stretches of storm tossed waters, faint streakings of northern lights and calms on northern fjords, over which sail the spirit boats of the viking warriors to Walhalla.

Individual treatment is shown in every detail, and in the color scheme it would seem that every known secret has been exhausted, for here the delicate tints and tones, heretofore known only to the painter's palette, have been produced. Nothing to equal it in this respect has ever been done before in clay and glaze. To those familiar with the fact that all colors look much alike before firing, and that often the extreme heat of the kilns proves disastrous to them, the difficulties will seem almost insurmountable. That they have been completely overcome is undeniable.

The ceiling in general is yellow, a subdued tone mottled in a way that suggests old tarnished gold on leather. The designs working through this field of color are in pinks, purples, reds, greens, grays, buffs, white, and black. The general colors of the walls are blues, greens, and buffs, into which are worked many soft colors and tones. The outer portion of the floor continues the soft gray greenish blue of the sea colorings on the walls, but the center reflects again the warm buff tone of the ceiling.

Every inch of this room is in tile, even the heat and ventilation grilles being perforated designs which conform with the general scheme. The room is about 50 feet square and has something over 10,000 square feet of surface in tile.

Considering the high plane of excellence and beauty which has been reached in this room, it is not difficult to believe that a new era for decorative art in clay and glaze is at hand in America.

The work was designed by Mr. John Dee Wareham of the Rookwood Pottery Company, whose work as a decorative artist is not limited to clays and glazes, as evidenced by his having designed all the furnishings for the rooms, which are in delightful harmony with the ensemble.

Panels depicting Longfellow's "Skeleton in Armor."

THE NORSE ROOM, FORT PITT HOTEL, PITTSBURG, PA.

Janssen & Abbott, Architects.

Editorial Comment and Miscellany.

Second Church of Christ, Scientist, Los Angeles. Plates 47, 48, 49, 50. This structure occupies a ground area of about 100 by 150 feet and is located on West Adams street. The size of the lot affords ample opportunity for landscape effects. The approach to the portico consists of a series of terraces. The materials used on the exterior of the church are light gray granite for the underpinning, while the walls are of matt or dull glazed white brick, trimmed with terra cotta of the same color and texture. The dome and lantern surmounting it are covered with heavy copper, and the pediment roofs with an olive green dull glazed shingle tile.

The entrance vestibule, which is 38 feet in height and terminates in a groined arched ceiling, communicates directly with the foyer, 32 by 65 feet in size, with tile floor, marble wainscoting, beamed and paneled ceiling, and large twin marble fireplaces at either end. To the right and left of the foyer are located the main stairways leading to the auditorium, while twin tunnel stairways lead directly ahead and land in the center of the auditorium. This main auditorium has a seating capacity of 1,200, without galleries or obstructions of any kind, and is in the form of a Maltese cross. Its dimensions are 93 by 106 feet, surmounted by a dome 70 feet in diameter, the crown of which is 96 feet above the floor. The high paneled wainscoting, the doors and pew seating, and all woodwork is of selected mahogany stained a soft brownish tone, while the floor is completely covered with interlocking rubber tile of harmoniously contrasting colors. In addition to the main stairways there are two commodious rear stairways which are reached from the side of Sunday-school entrances. In the rear of the foyer is the Sunday school, with a seating capacity of over 800 and with special arrangements for children's classes. Cloak and toilet rooms, also literature and ladies' retiring rooms, are contiguous to the foyer. In the rear of the auditorium are provided the readers' rooms with adjoining private toilets; the secretary's and directors' rooms with all necessary conveniences, and an ample loft to house the great organ. A complete modern and thoroughly equipped heating and ventilating plant is installed, also a vacuum dust-cleaning apparatus. The cost of the church complete was a trifle in excess of $300,000.

DETAIL FOR LA SALLE HOTEL, CHICAGO.
Northwestern Terra Cotta Company, Makers.
Holabird & Roche, Architects.

DETAIL FOR THEATRE.
Conkling-Armstrong Terra Cotta Company, Makers.
Stearns & Castor, Architects.

THE ARCHITECTURAL LEAGUE OF AMERICA.

THE league is now located in its new quarters at 1103 Union Trust Building, Detroit, Mich. The new Executive Board is made up as follows: President, Frank C. Baldwin; vice-president, Emil Lorch; corresponding secretary, M. R. Burrowes; recording secretary, Edward A. Schilling; treasurer, Adolph Eisen; Oscar Gottesleben and Dalton R. Wells. The chairmen of the various committees are: Architectural Annual — L. C. Newhall, Boston; Education — Newton A. Wells, Urbana, Ill.; Publicity and Promotion — Jessie N. Watson, St. Louis; Traveling Scholarship — Albert G. Skeel, Cleveland; University Fellowship — Emil Lorch, Ann Arbor.

The league announces a University Scholarship Competition, the program of which will be out on May 14th. Three scholarships are offered by Harvard University to the members of the associate societies and to the individual members of the league. Additional information may be obtained from Emil Lorch. Chairman of the Committee on University Fellowship, Ann Arbor, Michigan; or H. S. McAllister, Permanent Secretary, 1517 H. street, N. W. Washington, D. C.

GEORGE WASHINGTON MEMORIAL HALL.

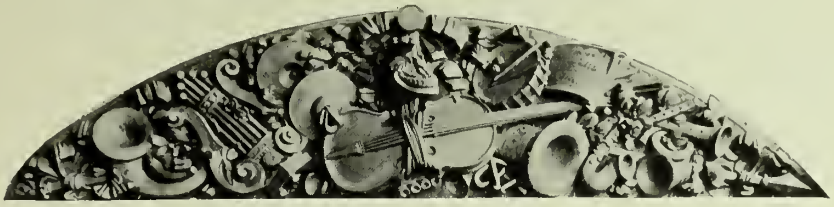
ONE of our most urgent needs is a suitable meeting place for national and international societies in Washington," writes Dr. William H. Welch of Johns Hopkins University. "This was painfully demonstrated by the hardships of the International Congress on Tuberculosis. Under existing conditions I do not see how we are justified in inviting large societies and congresses, especially those of an international character, to meet in this country; for the natural place for them is Washington." He thus voices the opinion of leaders in national, scientific, patriotic, medical, art and literary organizations, who are starting a movement to erect, by means of popular subscriptions, a proposed $2,500,000 auditorium at the national capital to be known as the George Washington Memorial Hall. Mrs. Henry F. Dimock, 25 E. 60th street, New York City, is the secretary of the George Washington Memorial Association, and Prof. H. Fairfield Osborn, Dr. Ira

Remsen, Edwin A. Alderman, Senator Elihu Root, Dr. S. Weir Mitchell and Dr. John A. Wyeth have volunteered, with Dr. Welch, to serve on an advisory council in assisting Mrs. Dimock to raise funds for the hall.

EXPENSIVE FOUNDATIONS.

BECAUSE of the extreme depth required for the footings of the new $8,000,000 Municipal Building facing Brooklyn Bridge Plaza in Manhattan, the foundations will cost, including inevitable extras, about $1,600,000. The contract was signed for a cost of an even million and a half. The crossing of two subways, the Interborough tube, and the tunnel looping connecting the East River bridges, will necessitate the building of a foundation to a depth of 130 feet below the street surface. This will doubtless be the deepest point that man will have gone into the earth to provide the footing for a building.

The foundation under the Singer Tower has a base area of 60 by 60 feet and goes through hard pan to solid rock. It cost $750,000 to prepare the caisson foundations of the Trinity and United States Realty Buildings, each covering an area almost as large as a city block, beside Trinity churchyard. But these foundations were carried only to good hard pan, which is usually accepted as suitable for the foundations of the average modern skyscraper in New York. Excavating hard pan under air pressure in that city, 70 feet below the street surface and 40 feet below water level, costs as much as $50 a cubic yard.



DETAIL FOR THEATRE.
New Jersey Terra Cotta Company, Makers.
W. H. McElfatrick, Architect.

"PAY-AS-YOU-ENTER" THEATRE.

A MAMMOTH new hotel with many novel features will be built on the Broadway block between 40th and 41st streets, N. Y., by Robert P. Murphy, proprietor of the Albany Hotel. The plans contemplate a twenty story building with fifteen hundred rooms. On the 41st street side, at the rear, is to be a vaudeville theatre of a sort of pay-as-you-enter type.

"AMERICAN RIVIERA."

THE recent opening of a new hotel, costing half a million dollars, at Pensacola, is part of a movement to make an "American Riviera" of the southern Atlantic and Gulf coasts. This will enable western Florida to share in the tourist patronage, and a few years will probably witness the erection of a chain of fine hotels extending from that state to Texas.

BUILDING OPERATION FOR MARCH.

OFFICIAL reports from forty-three leading cities throughout the country, as compiled by *The American Contractor*, New York, indicate that building operations, in the aggregate, are on a par with March, 1909. A decrease of operations in Greater New York of some $5,000,000 is made good by the combined efforts of Chicago, Philadelphia, Minneapolis, Portland, Ore., and Rochester. Building operations in New York City are of such magnitude, comparatively, that a serious fluctuation there frequently sways to such an extent as to show a gain or loss in the aggregate, when the rest of the country is holding its own or even increasing building operation. Eighteen of the forty-three cities present a loss of from 2 to 47 per cent, and twenty-five show a gain of from 2 to 252 per cent as compared with March, 1909. Cities showing a gain of over 50 per cent are: Birmingham, 180; Detroit, 75; Grand Rapids, 56; Hartford, 145; Minneapolis, 89; Portland, Ore., 66; Rochester, 80; Scranton, 252; Toledo, 103.

IT WAS chiefly through the influence of the late John Stewart Kennedy that Professor Hamlin, of Columbia

STORE BUILDING, BOYLSTON STREET, BOSTON.
Front of light cream matt glazed terra cotta furnished by the Atlantic Terra Cotta Company.
Kendall & Taylor, Architects.

University, spent three months in Constantinople last summer studying the site of Robert College and planning for the arrangement of the grounds and the erection of new buildings. Professor Hamlin's plans reached New York just after Mr. Kennedy's death. His bequest of $1,500,000 to the college will enable the program of expansion and development to be set on its way at once.

THE trustees of Lehigh University have decided to lend financial aid to fraternities desiring to build chapter houses on the campus. No single loan will be in excess of forty per cent of the cost of the building. The buildings must be so designed as to accommodate at least one student for every $1,000 of cost. The principal is to be repaid in sums distributed over a term of years.

D. H. BURNHAM & CO. have filed plans in New York for the hotel which Charles E. Rector proposes to build at the southeast corner of Broadway and 44th street, replacing his restaurant and café. The building will be of thirteen stories, totaling 200 feet in height, and will cost $1,400,000.

UPPER STORIES, MERCHANTS' EXCHANGE BUILDING, NEW YORK CITY.
Terra cotta furnished by New York Architectural Terra Cotta Company.
Maynicke & Franke, Architects.

THE trustees of the Atheneum Building, recently erected in Hartford by J. Pierpont Morgan as a memorial to his father, announce that Mr. Morgan has arranged for the purchase of land adjoining the memorial and will present it to the city as a site for a music hall building. The land offered comprises nearly half a block in the center of the city.

THE Southern Commercial Congress, which closed its sessions in Washington on December 7th, adopted a financial plan to build a $1,000,000 revenue-producing structure which is to be its permanent home in that city. One hundred persons have subscribed $1,000 each to the capital stock of a building corporation, which will issue bonds for the erection of the finest office building in Washington.

THE Tenement House Department of New York City officially gives the number of dark rooms (used for living purposes and containing absolutely no windows) now existing in the entire city as 101,117. Not long since there were 350,000. Rooms with windows opening upon too small an air shaft, or upon a covered shaft, or windows of too small size opening to an adjoining room are not included in this report.

IN GENERAL.

Carter, Black & Ayers have existing contracts for 2,500,000 brick, of which 1,000,000 are Velour brick in buff and brown, while the rest are French gray terra cotta to be used in constructing the hotel at 34th street and Park avenue, New York City, Warren & Wetmore, architects.

Announcement has been received of the partnership formed for the practice of architecture by Ernest F. Guilbert and James O. Betelle. Their offices are located at 25 West 32d street, New York City, and 917 Broad street, Newark, N. J.

A plot of land on the Delaware River at Gloucester, N. J., has been definitely chosen by Secretary Nagel as the site for the new immigration station for the Port of Philadelphia.

BROWNSVILLE BRANCH LIBRARY, BROOKLYN, N. Y.
Built of Fiske & Company's "Tapestry" bricks of soft tone, varying from gray to a light cream color.
Lord & Hewlett, Architects.

A fifteen-story hotel is being projected to occupy the former site of the Baltimore and Ohio Building at Calvert and Baltimore streets, in Baltimore. It will probably be named the "Emerson" after one owner of the land. Joseph Evans Sperry is the architect.

Baltimore's Union Station, for twenty-five years a landmark of North Charles street, is being torn down and is to be replaced by a structure which will cost, including approaches, about $750,000.

SOUTHERN PACIFIC RAILWAY STATION, SAN ANTONIO, TEXAS.
Roofed with Spanish tiles made by the Ludowici-Celadon Company.

The largest room in the world under one roof and uninterrupted by pillars is said to be in St. Petersburg. The roof is a single arch of iron. It is used for military displays, and a whole battalion can readily manœuvre in it.

A gift of $150,000 from the Pittsburgh Alumni Association of the Rensselaer Polytechnic Institute has been announced for the erection of an administration building and library at the Troy institution.

DETAIL FOR HOTEL SENECA, ROCHESTER, N. Y.
Brick, Terra Cotta & Tile Co., Makers.
Esenwein & Johnson, Architects.

What is said to be the first terra cotta house in New York was put up last year by Prof. James E. Lough of New York University, on the edge of the university grounds.

The tax books of New York City, opened January 10th, show the total assessed real estate valuations for the five boroughs to be $6,600,187,322.

Designs for the northeasterly corner wing of the Metropolitan Museum of Art have been approved by the New York Municipal Art Commission.

Harvard is planning for the erection of a group of five buildings to be devoted to the study of chemistry.

B. Cooper Corbett, architect, of Los Angeles, Cal., has moved his offices to 1128 W. P. Story Building.

D. C. Barbot, Charleston, S. C., has opened an office for the practice of architecture at 26 Broad street. Manufacturers' catalogues and samples desired.

The brothers Mason have given $250,000 to Yale University for the erection of an experimental laboratory of mechanical engineering.

A. Lincoln Fechheimer, architect, has opened offices in the Lyric Theatre Building, Cincinnati. Manufacturers' catalogues and samples desired.

The terra cotta used upon the exterior of the Second Church of Christ, Scientist, Los Angeles, was supplied by the Atlantic Terra Cotta Company.

Donn Barber, architect, is now located in his new quarters at 25 East 26th street, Madison Square, North, New York City.

Edward B. Lee, architect, formerly of the firm of Billquist & Lee, has established an office at 318 Berger Building, Pittsburg.

Herbert H. Brown, architect, has recently opened an office at Jamestown, N. D. Manufacturers' catalogues and samples solicited.

A new form of structure is that which shelters an aeroplane. In the land of Wright and Curtiss it is plainly called an "aeroplane shed." But one word is always better than two; and since we have adopted the French word *garage* for the home of the motor car, it is not unreasonable to call an aeroplane shelter, as they do in Europe, a *hangar*. To be sure, it is only French for "shed," but it is more impressive than our four-lettered word.

DETAIL FOR YALE BOAT HOUSE, NEW HAVEN, CONN.
South Amboy Terra Cotta Company, Makers.
Peabody & Stearns, Architects.

The firm of Taylor & Mosley, architects, formerly at number one Nassau street, are now located in their new quarters at 40 Wall street, New York City.

Des Moines, Iowa, is expecting to obtain an enormous new hotel structure from a New York syndicate, which is building hotels in Spokane, Seattle, and San Francisco, and which has recently erected a large hotel in Portland, Maine.

COMPETITION FOR A SMALL BRICK HOUSE.

TO COST NOT MORE THAN $4,000.

FIRST PRIZE, $500. SECOND PRIZE, $250. THIRD PRIZE, $150. FOURTH PRIZE, $100. MENTIONS.

THE COMPETITION CLOSES JUNE 1, 1910.

PROGRAM.

The problem is a small brick house suitable for a family of moderate means.

The location may be assumed in any town, small city, or suburb of a large city.

The cost of the house — exclusive of the land — shall not exceed $4,000; method of heating, plumbing, other fixtures, and finish to be governed by the limit of cost.

A detailed statement of cost must accompany each design, this statement to be type-written on one side only of a sheet of paper measuring 11 inches by 8½ inches.

Designs which in the opinion of the jury call for a house which would cost more than the amount named will not be considered.

The object of this Competition is to obtain designs for Small Brick Houses. This is a problem which will have a very great deal of interest for very many people. Not all those who wish to live in mansions can do so — the great majority must house themselves from limited means. If we seek to improve the architecture of our country-side we shall find a fruitful field in the development of the small house along rational lines, depending for the element of beauty upon the designer's ability to treat the problem with intelligence and skill. It is hoped that the results of this Competition will help to point the way to a better class of moderate cost houses to the end that here in America we shall become possessed of a domestic architecture which in its simple beauty will compare favorably with the best that Europe has to offer.

To summarize and emphasize the requirements, — this Competition calls for a Small Brick House, the cost of which is not to exceed $4,000.

CONSTRUCTION: There are no restrictions as to general type of construction except that the exterior walls are to be built of brick.

DRAWING REQUIRED (there is to be but one):

On one sheet a pen and ink perspective, without wash or color, drawn at a scale of 4 feet to the inch. Plans of the first and second floors at a scale of 8 feet to the inch. A sketch showing detail of front entrance. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit. The plans are to be blocked in solid. A graphic scale must accompany the plans. The brickwork must be clearly shown on the perspective and detail. Make or style of brick is not to be mentioned on the drawing.

The size of the sheet is to be exactly 24 inches by 18 inches. Strong border lines are to be drawn on the sheet 1 inch from edges, giving a space inside the border lines 22 inches by 16 inches. The sheet is to be of white paper and is not to be mounted.

The drawing is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawing is to be delivered flat, or rolled (packaged so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before June 1, 1910.

Drawings submitted in this Competition are at owner's risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five members of the architectural profession.

In making the award the jury will not consider those designs which obviously would cost more to execute than the limit set, $4,000. With this limitation, excellence of design will be given first consideration, and plan second.

Drawings which do not meet the requirements of the program will not be considered.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

For the design placed first there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This Competition is open to everyone. The prize and mention drawings will be published in THE BRICKBUILDER.

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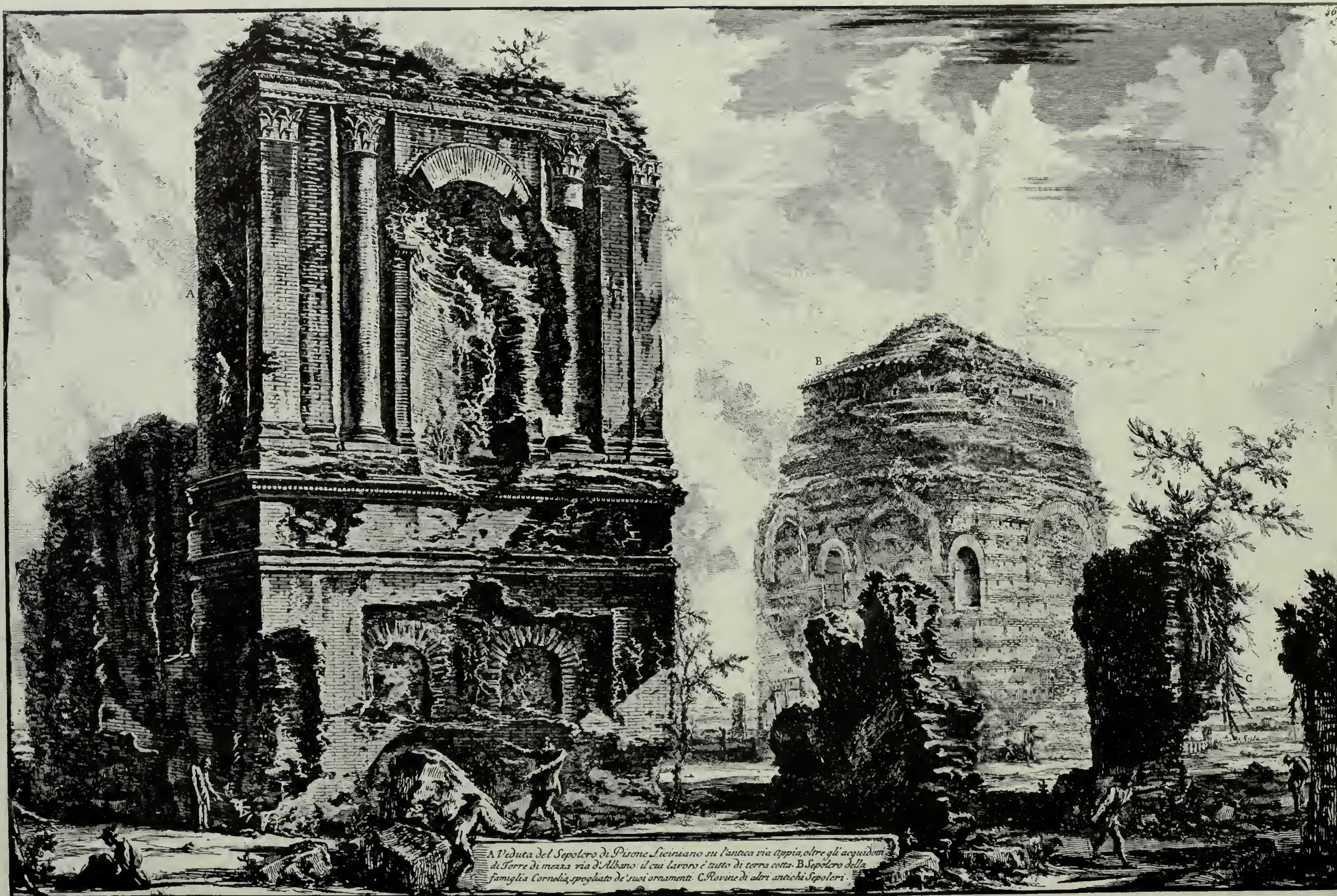


RUINS ON THE APPIAN WAY NEAR ROME, BETWEEN THE 8TH AND THE 9TH MILESTONES.

GIOVANNI BATTISTA PIRANESI, DEL.

In 1850 Pope Pius IX. commissioned Canina to excavate the Appian Way as far as the 11th milestone. Canina's book enables us to identify many of the monuments unknown or misnamed at the time when Piranesi worked. The brick monument at the left in Piranesi's engraving is identified as the tomb of Q. Verannius, possibly the same who died in Britain in A. D. 55. The round tower on the right belonged to a structure large enough so that it was dedicated as a Christian church some time before the 10th century.

THE BRICKBUILDER

VOL. XIX. NO. 5. MAY, 1910.

Hints on Architectural Acoustics.*

BY HUGH TALLANT.

INTRODUCTION.

AMONG the multitudinous qualifications required of the modern architect there is no one more vital to the ultimate success of his work than a practical knowledge of acoustics. Almost every public building, whether it be a school, a church, a theatre, or a house of parliament, contains at least one important auditorium; and if in that auditorium the speakers cannot be distinctly understood, the building as a whole falls short of success, no matter what its beauty, convenience, or other architectural excellence. Yet, for some unaccountable reason, the science of determining in advance the acoustic qualities of an edifice — what for lack of a better name we are forced to call architectural acoustics — this essential branch of an architect's training has hitherto been neglected. There is not, to the writer's knowledge, an educational institution in the entire world which provides a single practical course on this important subject, and, with the lone exception of Professor Sabine's articles on resonance and sound absorption,* there does not exist a text-book or treatise from which the architect may glean the slightest practical suggestion.

No one who has not vainly ransacked the standard works for some vestige of concrete information can realize the utter dearth of definite scientific resource. Not only are all quantitative data conspicuously lacking, but even the futile generalities advanced under guise of theoretic recommendation are often in need of amendment. The pioneer in the field of architectural acoustics finds himself everywhere thrown upon his own resources. He must combat the ingrained belief that all acoustic success is now, and ever will be, wholly due to chance. He must himself ascertain every concrete fact required as a basis for his investigations, and if he dare commit his conclusions to writing, he soon finds that what began in a sincere attempt to cast light upon an obscure subject is in danger of developing into a mere assertion of personal opinion. It is assuredly not from choice that in the following pages the writer has been obliged to rely upon an all-too-frequent reference to his own experience.

Public belief and scientific apathy to the contrary, there seems no obvious reason why the laws of sound may not be turned to practical account, as are the laws of pressure and reaction. Our whole theory of the mechanics of materials is based upon assumed elastic properties of matter which are of doubtful uniformity and of complication without end. Yet this theory, which requires a safety factor of not less than four, enables us to erect structures whose monstrous height would have seemed a marvel to our forefathers. On the other hand, the laws of sound are uniform in action, simple, and of a character which facilitates their graphical expression. It is, to say the least, surprising that some one of a thousand practical scientists has not long since put the theory of architectural acoustics upon a working basis. Another generation will doubtless see treatises on this subject as voluminous as the present text-books on construction, and specialists as expert as the heating, sanitary and civil engineers of to-day. No such extensive propaganda is contemplated in the present instance. The object is merely to describe a simple means whereby with rule and compass the architect may approximate in advance the acoustic qualities of an auditorium, and avoid the most serious defects.

In order that an audience may hear with ease and pleasure three conditions must be fulfilled. The sound must be loud, it must be distinct, and it must be of rich and uniform quality. These requirements are closely interrelated, and it is impossible to consider either of them independently of the others. They must be collectively approached from the standpoints of theory, practice and illustration.

Part I of the following treatise will contain such theoretic principles as bear essentially upon the architectural problem, together with the data necessary for computation; Part II will explain how the acoustics of the ordinary type of auditorium may be determined in advance of construction; Part III will illustrate the actual procedure in the case of four successful auditoriums varying from a seating capacity of 150 to one of 2,200. The reader will find nothing marvelous or strange in the suggestions outlined. They attempt no fundamental

* Architectural Acoustics, by Prof. Wallace C. Sabine, published in the *American Architect and Building News*, April to June, 1900, and in the *Proceedings of the American Academy of Arts and Sciences*, Vol. XLII., page 51. All the precise data contained in the following pages were drawn from this one source by the kind permission of Professor Sabine, to whose courtesy the writer owes also the scientific confirmation of many essential points of theory.

or detailed presentation of so broad a subject. They involve no complicated mathematics, no tiresome calculations, nothing beyond the simple application of half a dozen principles of physics familiar to every high school boy. Yet they comprise a method, which, in actual test, has given unvarying success in a series of auditoriums constructed during the last fifteen years, and which, it is hoped, may now prove of public interest and service.

PART I.

Theoretic Principles.

The sensation of hearing is caused by vibrations which set in motion the mechanism of the ear. Such vibrations occur in all elastic substances and can be transferred from one substance to another. As a rule, however, they must be transferred to the air before they can affect the ear.*

Sound is sometimes defined as the sensation of hearing, sometimes as vibration capable of causing the sensation. Without wasting time over metaphysical quibbles, we shall merely say that *sound is audible vibration*, and that *a single sound is so much of a vibration* (a square inch, perhaps) *as affects a single ear*. Closer discrimination is unnecessary: for if we can control the vibrations, we can control the sensations which they produce, and in this way arrive at any desired result. For instance, suppose that an audible vibration is repeated at fixed intervals of time. If the intervals are long enough, the vibrations will be perceived as separate sounds, but if the intervals be gradually shortened, a point will presently be reached where the sounds will seem to merge into a continuous tone, whose pitch will rise as the intervals grow shorter. This is a simple case where by controlling the rapidity of the vibrations we can control the varying sensations of pitch.

Sound may result from the action of any force capable of producing vibration. When, for example, an isolated explosion crowds back the air on all sides, there is formed a spherical sound-wave of compressed air around the point of explosion, just as a circular ripple is formed around the point where a stone strikes the still surface of a pond. Such a sound-wave expands continually in all directions at a uniform speed of about 1,200 feet a second.

In Fig. 1 the point of explosion is indicated by S, and the spherical sound-wave by the circle X Y Z. The distance S X will amount to 1,200 feet at the end of the first second after the explosion, 2,400 feet at the end of the second second, and so on until the wave strikes some obstruction.

While a speed of 1,200 feet a second would be marvelous for a flying machine, it is infinitesimal as compared with that of other natural forces, such as light and electricity. It is actually less than half the muzzle-velocity developed by modern cannon, and is so slow as to become a serious factor in determining acoustic conditions. Now the shortest perceptible space of time is about $\frac{1}{15}$ of a second. This corresponds to only 80 feet of sound travel, so that the speaker's voice occupies a very distinct space of time in reaching the rear of an auditorium 100 feet in depth.

* The phenomena of the audiphone and of the action of water against the ear-drum have no importance in the present connection.

As sound recedes from its original source its intensity diminishes as the square of the distance from its origin increases. At 100 feet from the starting-point it is only one-quarter as loud as at 50 feet, and at 150 feet only one-ninth as loud. On the other hand, if we could bend the wave out of shape so that several parts of it would converge upon the same point, we might in this way reinforce the sound sufficiently to offset the natural diminution. If we could make four parts converge at 100 feet, or nine parts at 150 feet, from the starting-point, we might form a combination that would be as loud as the natural sound at 50 feet. This is exactly what happens in the case of the ordinary speaking tube. Here the interior surface of the tube forces the entire sound-wave to concentrate in the same direction, and consequently there is no decrease in the intensity of the sound except through friction against the inside of the tube.

Now if we could extend the same process to an auditorium, and arrange the walls and ceiling so as to concentrate the sound wherever needed, we should be in a fair way to solve the problem of *loudness*. All that we should need to know for this purpose would be exactly how sound is deflected from the walls of a room, and how much is incidentally lost in the impact.

Fortunately there is no lack of theoretic information on this point. The text-books are agreed that a sound is deflected from a wall just as a billiard ball is deflected from the cushion. We all know what happens in the case of the ball. Independent of English (which has an unimportant analogy in the case of sound), the ball rebounds from the cushion at exactly the angle at which it struck, but with diminished momentum. If the original impetus was sufficient, the ball may take a second or third cushion, but with repeated deflection its momentum will eventually be destroyed, and it will come to rest. The exact diminution in momentum depends mainly upon the material of the cushion, but the quality of the ball and the angle of impact also have an influence. An exactly analogous process takes place in the case of a sound. Upon striking a wall it is deflected back into the air at the same angle at which it struck, but with diminished intensity. If it was originally powerful enough it may continue on to a second or third wall, but eventually its momentum will be entirely absorbed, and it will die out. The diminution in loudness occurring with each deflection depends mainly upon the material of the wall, but the pitch of the sound and the angle of impact also have an influence. The precise absorbing-capacity of different materials for the pitch of middle C is enumerated by Professor Sabine in the treatise already mentioned, together with a discussion of the effect of changes in pitch. For ordinary purposes it is sufficiently accurate to disregard altogether the influence of pitch and angle of impact, and to consider only the material of the wall. The following approximate classification will be found convenient:

Wall, floor and ceiling surfaces — such as wainscoting, wood or marble flooring, plastering, glass and masonry — absorb no sound.

Heavy curtains, rugs, and carpets without batting absorb one-quarter of the sound.

Carpeting upon heavy batting absorbs one-half of the sound.

Cushions, ordinary upholstery, and heavy felting hung free from the wall absorb three-quarters of the sound.

The audience and very heavily upholstered furniture absorb all the sound.

In practice the above table gives results which can be relied upon within about five per cent, except in the case of carpeting, which varies some ten per cent either way with conditions of quality, wear, and amount of batting. At the pitch of middle C, masonry or plaster walls and ceilings actually absorb only some two or three per cent for each impact, and wood sheathing only about six per cent, while the audience absorbs ninety-four per cent. A sound may, therefore, be deflected two or three times from walls and ceiling without losing so much as one-tenth of its volume, whereas as soon as it reaches the audience it is almost entirely absorbed.

Knowing the amount of sound lost in each impact and the exact angle of deflection, it becomes possible to trace the path of any sound from the time it leaves the speaker's lips until it reaches the audience, and to calculate how much of its intensity is lost in transit. In point of fact not over one-quarter of the speaker's voice ever travels straight to the audience, the remaining three-quarters being directed first to the walls, floor or ceiling. By proper curvature and inclination of the deflecting surfaces we can arrange to distribute these three-quarters of the sound in increasing amounts toward the rear of the auditorium, and in this way artificially counteract the tendency of the sound to become fainter with increased distance from the speaker. As the amount lost by each impact is practically negligible, we can, if we wish, allow the sound to strike several times before it is finally deflected to the hearer. There are, therefore, several satisfactory arrangements of the deflecting surfaces according to the number of deflections allowed, and it is almost always possible to find an arrangement which corresponds to the architectural treatment desired. This procedure furnishes an absolute solution of the problem of *loudness*. It necessitates a certain amount of patience and care, but involves no insurmountable difficulties and no more complicated mathematical calculations than the measurement of the distances of sound travel and the angles of incidence and deflection. At the same time it is to a certain extent limited by conditions of distinctness which have not yet been considered. They are best explained by a simple diagram.

In Fig. 2, S is again the speaker, X Y Z the sound-wave, P and Q two small parts of the wave, and V W the wall of the auditorium. Now suppose that the sound P strikes the wall at R and is deflected back with slightly diminished intensity in the direction R A. We know that the angle P R W is equal to the angle A R V and that these two angles are in a plane perpendicular to the wall V W.

Now many other parts of the sound-wave are also moving in this same plane. If Q happens to be one of these parts, then eventually the crooked path of the sound P will cross the straight path of the sound Q at a point which is indicated by A. A person listening at A will, therefore, hear both sounds, first the sound Q, which has come by the short straight path S Q A, and subsequently the sound P, which has come by the longer crooked path S P R A. It has already been mentioned that the shortest perceptible space of time is about $\frac{1}{15}$ of a second. If the sound P reaches the listener less than $\frac{1}{15}$ of a second after the sound Q, he will merely perceive a single sound somewhat louder than either P or Q. On the other hand, if P reaches the listener more than $\frac{1}{15}$ of a second after Q, he will hear two distinct sounds. Finally, if P reaches the listener at exactly $\frac{1}{15}$ of a second after Q, he will merely be aware of indistinctness or confusion in the sound.

It is not difficult to determine which one of these three conditions actually exists in a given case: for we know that $\frac{1}{15}$ of a second of time corresponds to 80 feet of sound travel. All that is necessary is to determine by

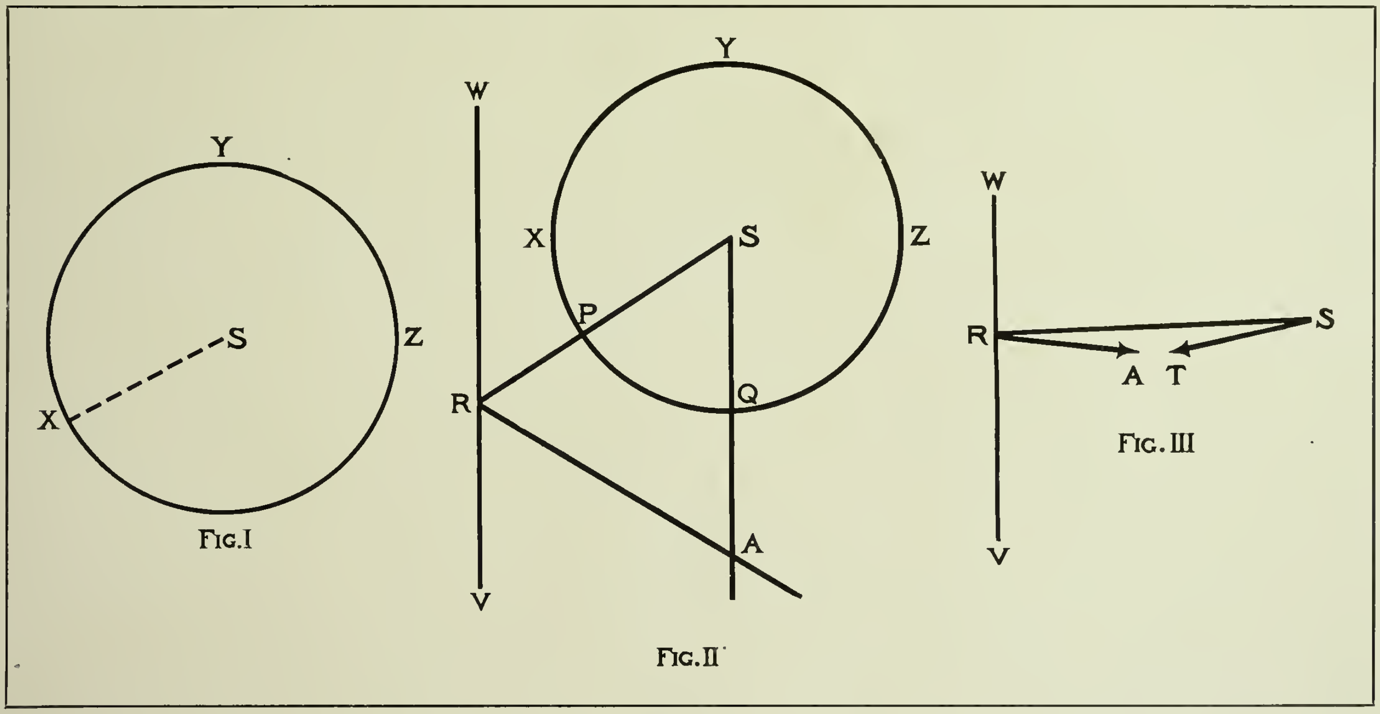


Fig. I
Fig. II
Fig. III

measurement whether one of the two sound paths is 80 feet longer than the other. In practice it is not safe to allow a difference of over 70 feet. Whenever the discrepancy exceeds this amount it is desirable to change the inclination of the deflecting surfaces so as to throw the sound farther away from the speaker. If such a change is impossible the only recourse is to cover the deflecting surfaces with sound-absorbing material, but this procedure is unfortunate, as it wastes perfectly good sound which might otherwise be utilized where extra loudness is needed.

It does not make any serious difference whether the sound is reinforced from a side wall, from the floor or from the ceiling. On the other hand, the case of the wall opposite the speaker, that is of the wall at the back of the audience, is quite different. A sound deflected from this wall is almost sure to produce unfavorable results. The reason is easily seen. In Fig. 3, S R A is such a sound deflected from the wall behind the listener at A. This sound returning directly, or almost directly, toward the speaker, meets subsequent sounds of the speaker's voice moving in the opposite direction S T, in what might be called a head-on collision. The result is a confusion called sound-interference, the exact effects of which depend upon the volume and pitch of the conflicting sounds, and upon other conditions practically impossible to determine. The easiest solution of the difficulty is to avoid it altogether by destroying the deflected sound. This can usually be done either by covering the rear wall with sound-absorbing material, or by curving or inclining it so that all sound will be deflected to some other absorbing surface before it can reach the audience. It is worth noting, in this connection, that sound casts a shadow exactly like light, and that there is no need of applying sound-absorbing material to the rear wall at points where it is in sound shadow.

The case of the wall behind the speaker is very similar, but as there is no part of the audience between this wall and the speaker there is no need of sound-absorbing material. On the contrary, so considerable a part of the sound will always be deflected to the audience in spite of interference, that this wall may be included with the side walls for purposes of sound reinforcement.

It is evident that between cases of extreme sound-interference and others of almost perfect combination there must be numerous intermediate conditions of partial interference. In point of fact the whole interior of any auditorium is full of sound eddies varying constantly with the pitch and volume of the component tones. The writer knows no practical way of determining these conditions in advance, but his experience has been that if the serious difficulties arising from the rear wall are avoided the others may be neglected without noticeable inconvenience.

The foregoing analysis indicates that the conditions of distinctness are two. First, no two sounds must reach the same point by paths one of which is over 70 feet longer than the other. Second, no sound must be deflected from the rear wall into the audience. Within the limits of these conditions sound may be deflected to any part of the auditorium in such a way as to reinforce the direct sound and thereby produce the requisite loudness.

The third essential of acoustic success is no less tangible than the other two, but it is of a somewhat more complex nature. To trace in detail the connection between architectural construction and quality of tone would involve the mathematics of musical pitch and harmony, and a description of the more important musical instruments, together with the theoretic principles involved in the construction of each. Such a discussion would not be altogether foreign to the question of architectural acoustics, but it would lead us very far afield, besides duplicating much that is contained in all the standard text-books. For present purposes, therefore, we will merely state that the influence of architectural surroundings upon quality of tone is mainly dependent upon two factors, resonance and reverberation. Resonance is prolongation of tone produced by continuous vibration of elastic materials. Reverberation is prolongation produced by repeated deflection of sound from walls, floor and ceiling. These two phenomena, although at times resulting in similar acoustic effects, are fundamentally different in character, and require different architectural treatments. They will, therefore, be considered separately and in some detail.

Resonance occurs wherever vibration is transferred from one material to another, either by direct contact or through the air. When the two materials are in contact the second material will respond to all vibrations of the first, and the result is usually a very great increase in the volume of sound produced. A vibrating piano-string would of itself emit a very feeble tone because it is so slender that it can affect only a small volume of air. Supported on a sounding board by means of a fret it forces the board to vibrate at the same rate as itself or, in other words, to give out a tone of the same pitch, and as the surface of the board is large and can affect a considerable volume of air, the resulting tone is full and strong. Extend the process by placing the piano on a wooden floor and the same vibration will be communicated to the floor with the effect of a still further increase in loudness.

When the two materials are not in contact and the vibration is transferred from one to the other through the air, the second material will respond only to vibrations with which it happens to be in sympathy. In this case there is no real increase in loudness, the vibration being produced at the expense of sound which would otherwise be deflected. The greater the vibration the less the deflected sound. A wainscot near but not in contact with a piano will respond only to tones of a certain pitch. The floor of an orchestra-pit will respond only to a part of the notes emitted by the violins and other instruments which do not rest upon the floor. Under these circumstances a series of notes of varying pitch are apt to lack uniformity of both loudness and resonance. The notes to which the woodwork responds will be more prolonged and less loud. Those to which the woodwork does not respond will be less prolonged and more loud. It is evidently essential for the sake of both quality and uniformity of tone that floors and wainscoting should be so constructed as to vibrate in sympathy with tones of every pitch; and the same is true to a greater or less extent of all other vibrating materials in an auditorium. Some apparently successful attempts in this direction will be fully described in Part II. Plaster and masonry walls and ceilings do not respond to *interior sound* sufficiently to produce a marked effect, but plaster on wire lath will sometimes resound to *exterior shock* in an extremely unexpected and disconcerting manner. This difficulty will be considered in connection with sound-proofing.

Several considerations must be taken into account in estimating the resonance in a given case. The mere introduction of large amounts of vibratory material does not of necessity involve a corresponding increase in resonance: for if the material be not so placed as to be largely exposed to direct impact of sound, very little vibration may be developed. In point of fact, ordinary wainscoting is naturally rather badly placed in this respect because the lower portions are shielded by the audience. A wainscot on the rear wall is apt to be entirely in sound shadow, and two or three deflections from adjacent ceilings must usually be contrived in order to direct any considerable volume of sound upon it. This is particularly true on the balconies; and, as will be explained in Part II, it is occasionally necessary to take some chances of indistinctness in order to obtain sufficient vibration.

As resonance is produced at the expense of deflected sound, it might appear desirable to exercise care in the use of wainscoting so as to avoid too great a diminution in the volume of deflected sound. In point of fact, however, there is no danger of any great loss in loudness on this account. The reason is that sound deflected from the upper part of a wainscot *never reaches the audience*, and consequently its loss is not perceived. It sweeps over their heads to the back of the auditorium and if not there destroyed returns in a plague of interference. On the contrary, the *vibration left behind in the wainscot continues to be heard* by the audience, and augments the volume of sound *actually heard*. For similar reasons, but to a less extent, an increase in total volume of sound is produced by constructing the floor of an orchestra-pit so as to act as a sounding board. The vibratory materials in an auditorium should be carefully distributed with reference to their proximity to the audience. A great deal of wainscoting concentrated at one point will not greatly enhance the resonance elsewhere. Much judgment and ingenuity are often necessary in order to make the decorative scheme meet the acoustic requirements, but so essential is a maximum of resonance in all parts of an auditorium that too much attention cannot be paid to the design, location and exposure of all vibratory surfaces.

On the other hand, reverberation, while frequently agreeable, is always an element of danger. At its best it produces an effect somewhat similar to true resonance; at its worst it degenerates into sound-confusion and echo. In a small room the result is pleasing when the reverberation is not excessive. In such a case, with deflections numbering some eighty or more a second, the average loss of sound per impact depends wholly upon the relative amounts of sound-absorbing materials. It makes no perceptible difference where the speaker or musician is placed or how the furniture is arranged: the reverberation will continue the same so long as the walls and contents of the room remain unchanged. Knowing the average distance of sound travel and the exact absorbing capacity of each of the materials to be used, it becomes a purely mathematical task to determine an average absorbing capacity which will give any desired prolongation of sound. The problem has been fully investigated by Professor Sabine, who has found by practical experiment that a reverberation lasting 1.1 seconds gives the most pleasing effect in an ordinary sized music-room. There is no occasion for duplicating here the theory and method of calculation, which are fully developed in the treatise already so frequently cited.

The larger the room the longer will be the average distance of sound travel, and the longer the reverberation for any given capacity of sound absorption. By the time we reach a room whose dimensions average 40 or 50 feet, the calculation begins to be complicated by factors other than mere size and absorbing capacity. The shape of the room and the location of the principal absorbing materials begin to have an appreciable effect, and the position of the speaker assumes an importance. Suppose a hall so arranged that no sound is deflected more than three times before reaching the audience, a condition by no means impossible. In such a case, if the walls absorb two per cent per impact, and the audience ninety-four per cent, there will remain after striking the audience less than six per cent of the original sound — an average loss of more than fifty per cent per impact. But now suppose that a dome is added and that the walls are curved so that each sound averages seven deflections before reaching the audience. There will still remain over five per cent of the sound, or approximately as much as in the first case, but the average loss per impact is only about thirty per cent. Evidently in the second case the reverberation will last much longer than in the first case, although the exact amounts of absorbing material in the room are unchanged. Again, suppose that the dome is so small as to occupy only a portion of the ceiling. In this case all sounds except those rising into the dome will be practically destroyed in four impacts, or perhaps $\frac{1}{16}$ of a second, but the sound in the dome may not wander back to earth until after an entire second of repeated deflections, producing a distinct and annoying echo.

Where the architect is called upon to remedy existing defects, the cause of the difficulty may usually be diagnosed and the remedy ascertained by such considerations as have just been enumerated: for in this case the results are all in actual evidence, and only known conditions must be met. Where, on the contrary, the architect is called upon to design a new auditorium, he must foresee every possible contingency, and the chances of missing some small but vital factor become almost overwhelming. With a seating capacity of upwards of a thousand, involving the separate consideration of nearly every auditor, the successful use of reverberation becomes too laborious for practical employment, and the only escape from the dilemma is to rely altogether upon resonance for quality of tone. If the suggestions concerning loudness and distinctness have already been carried out, the greater part of every sound-wave will have been already utilized to practical advantage, and it merely remains to destroy the remnants by proper application of sound-absorbing material.

Of course perfection is not in humanity, and it is not possible to eradicate every vestige of undesirable deflection, but so far can this procedure be carried as to give the resulting tone a disagreeably lifeless quality. To offset this deficiency it is desirable to develop true resonance to the utmost by means of vibratory material, such as wainscoting and woodwork in general. *Resonance is never too accentuated where all possible reverberation has been eliminated*, and the amount of properly designed wainscoting, fixture work and other vibratory materials which may be introduced by the architect, is limited only by the decorative treatment of the auditorium and the length of the owner's purse. The acoustic effect resembles the humming accompaniment to a college glee, and is never so loud as to endanger the distinctness of the speaker's utterance. An auditorium designed for a maximum of resonance and a minimum of reverberation will combine the quality of tone necessary for music and the distinctness necessary for speaking: it will be equally well adapted to the production of both opera and drama — often an indispensable requirement.

The reader will have noted that in the preceding discussion there has been no mention of one very important vibrating material, namely, the air itself. As everyone knows, a column of air under certain conditions, as in an organ pipe, may produce a musical tone of tremendous volume. Such vibrating air columns exist to a slight extent in all auditoriums. They are conditioned by the relation between the distance of a given musical instrument from the wall and the pitch of the tone emitted. Obviously the pitch is a variable quantity, whereas the distance of the instrument from the wall is usually fixed; at all events it cannot be altered to suit every change of pitch. Possibly these vibrating air columns should be considered in placing the different instruments in an orchestra-pit.

So far, we have considered the action of sound in the air alone. Its action in solids is exactly analogous. It spreads in a spherical wave until it reaches the surface of the solid, and then is partly absorbed into the adjacent material and partly deflected back again. In practice, the result is apt to be somewhat unexpected because the materials of a building exist in thin layers, such as walls and floors, which prevent the sound from spreading laterally, and therefore transfer it to great distances with surprisingly small loss in intensity. A tie-rod imbedded in concrete acts in exactly the same manner as a speaking tube. The sound-wave is prevented from spreading laterally, owing to the difference in the consistency of steel and concrete, and consequently travels from end to end of the rod with almost no diminution. If one end of the rod chances to be attached to a vibratory surface, such as plaster on wire lath, a jar at the other end of the rod may be so transferred to the plastering as to result in a loud and prolonged sound. The same is of course true of steel girders and columns and of any other elastic material in similar shapes. A shock originating on the outside of a building may in this way be transferred in formidable proportions to the interior. The proper means of preventing the passage of sound is evidently to interpose successive layers of materials of different consistencies, taking care that no elastic material connects the different layers. A series of air spaces, separated by independent walls or partitions, approximates a theoretic sound-proofing, but care is necessary to prevent sound-communication from wall to wall through the floor girders or furring strips. Such an arrangement is open also to the objection that the air spaces themselves are liable to vibrate to tones with which they happen to be in sympathy. The writer has found by experience that a clear space of about 6 inches under the flooring of an orchestra-pit gives a maximum volume to tones of average pitch. Experiments conducted by Professor Sabine have shown that an air space 8 inches wide gives a maximum tone for the pitch of middle C. Probably this width corresponding to maximum tone has some mathematical relation to the length of the sound-wave, and would vary with the pitch. In the absence of complete data on this point, it would appear desirable to keep the air spaces either as shallow as possible or over 16 inches deep, avoiding spaces about 6 inches deep as likely to prove sonorous. The exact construction in one particularly difficult case will be fully described in Part II.

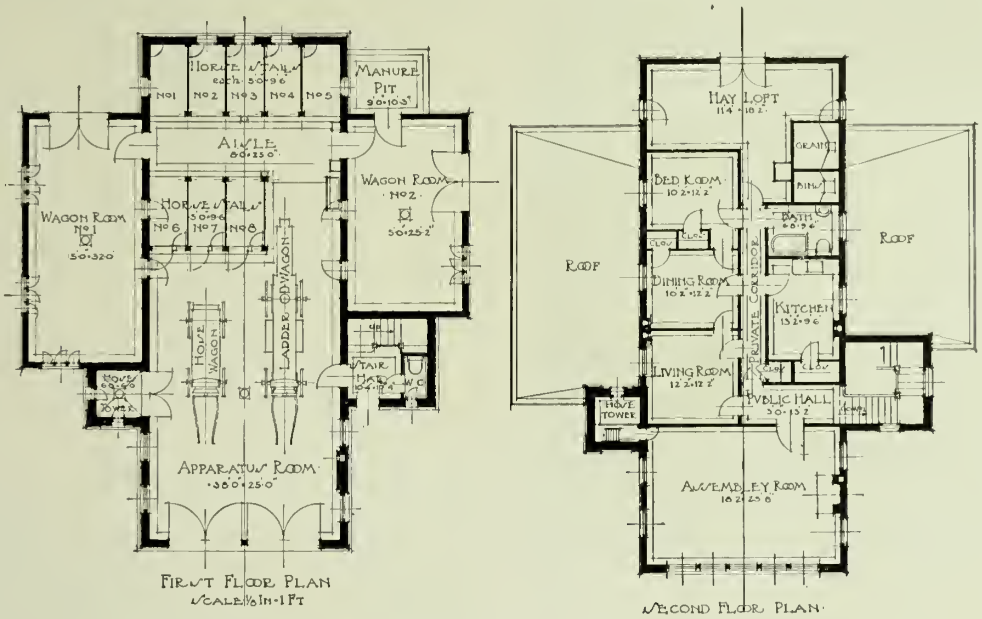
FIRE STATION AND TOWN HALL, WYOMING, OHIO.

GARBER & WOODWARD, ARCHITECTS, CINCINNATI, OHIO.

Fire Department Buildings.

BY HALSEY WAINWRIGHT PARKER.

THE architecture of a municipal or civic building, especially if it is in a city of considerable population, tends towards formality rather than picturesqueness in design, and naturally becomes somewhat monumental in its character. Economy of space, ease of circulation, simplicity of arrangement, are all essential and produce symmetry of plan, uniformity of treatment, and directness of expression — all of which are factors in monumental design. The development of the details of buildings of this character entirely depends upon the number of different demands made upon the buildings and the comparative complexity of its requirements. The fewer requirements to be satisfied the less the possibilities of picturesqueness. In fact picturesqueness is the accident of consecutive growth, and becomes affectation if deliberately invented. And in addition to this, civic buildings, unless entirely isolated from all except ample natural surroundings, need to have sufficiently dignified character to be distinctive and to prevent their being overpowered by their adjacent neighbors. For all these reasons it can reasonably be assumed that civic buildings should have simple and monumental character rather than elaborated and aggressively unique design.



FIRE DEPARTMENT BUILDING AND TOWN HALL, WYOMING, OHIO.
Garber & Woodward, Architects.

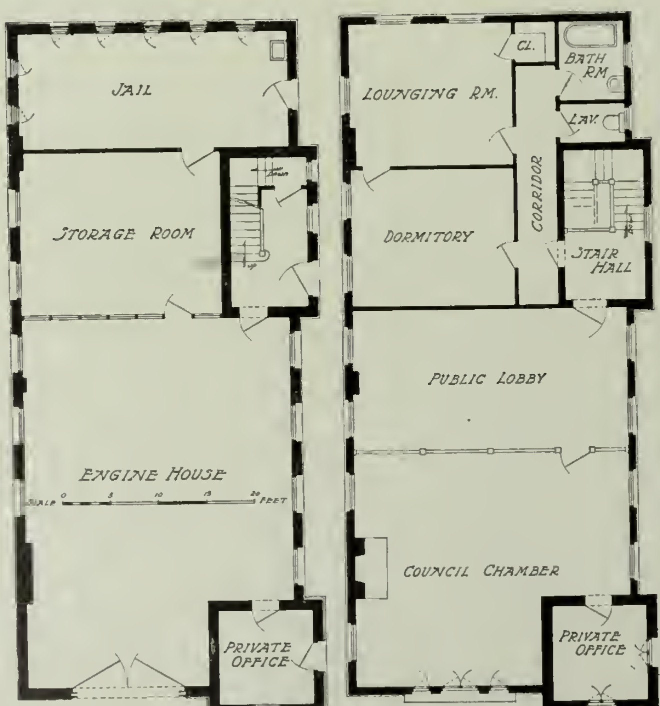
Of the many types which belong to this class, the one having the most definitely organized and in many respects the simplest plan is that of the Fire Department Station. Its factors are few, and are, room for the apparatus with ample and direct access to the street, if horses are used — stables adjacent to the engine house; dormitories for the men directly over the apparatus room; a recreation or lounging room for the men, and a hose tower. Additional factors are secondary. The result is a cubical, a building which does not turn corners in its plan, and usually does not exceed two or at the utmost three stories in height. This is exactly the type of building which is extremely interesting to an architect, as its purpose is readily expressed and it has not excessive height for the width of its façade. Also it has or can have an adequate amount of wall surface, without excess of openings and voids, and with the openings easily and naturally placed in good relations to each other.

With the exception of the main doorways there is nothing to absolutely fix the size, shape or position of openings, excepting the fact that adequate light should be provided, and this can be easily obtained. There are few if any complications caused by the adjustment over or around each other of rooms of very different areas and heights. The main entrances are capable of being made excellent in proportion and treatment, and in many cases an opportunity occurs which is rarely offered in other buildings — that of a tower which is not only of use but is necessary, and is not an addition for the sake of fantasy only, and a tower which requires few if any openings in its walls. These are ideal requirements, seldom presented in architectural design, and yet despite this fact, there has been no type of civic building so neglected, so wretchedly designed, and so feebly expressed as the Fire Department Building. It is not difficult to determine the apparent reason for this neglect. The problem was essentially one of utility. The location of the buildings was not of especial importance, the chief essential being that they should be in convenient places for efficient service. No care was given to anything more than the utilitarian problem, and in most cases little care to that.

That the Fire Department Building should serve its district, house its force, and be built with economy, was, and often is, deemed sufficient. But it has been proved time and time again that buildings to which little thought has been given have thoroughly expressed that unfortunate fact. The class of architects, fortunately becoming gradually less, to whom any piece of work was merely an opportunity to erect an unconsidered structure, were for years employed on these buildings, if in fact any architect was employed. The conditions are changing — there is appearing a certain pride taken in the quality of even the minor buildings erected by a municipality. City officials are beginning to exercise discriminative choice, recognizing the fact that good work redounds to their credit, and as a result

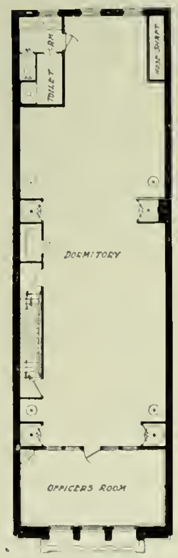
FIRST FLOOR PLAN SECOND FLOOR PLAN

FIRE DEPARTMENT BUILDING, EAST ORANGE, N. J.
Walker & Hazzard, Architects.



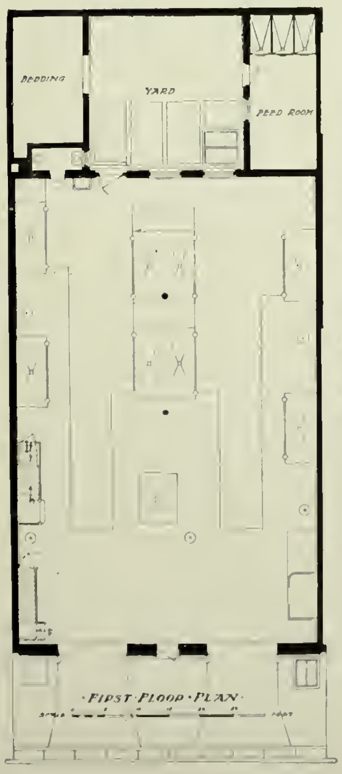
·FIRST·FLOOR·PLAN· ·SECOND·FLOOR·PLAN

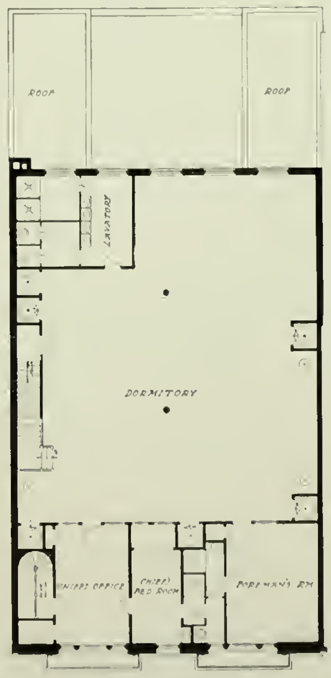
FIRE DEPARTMENT BUILDING AND TOWN HALL,
LOCKLAND, OHIO.
Garber & Woodward, Architects.

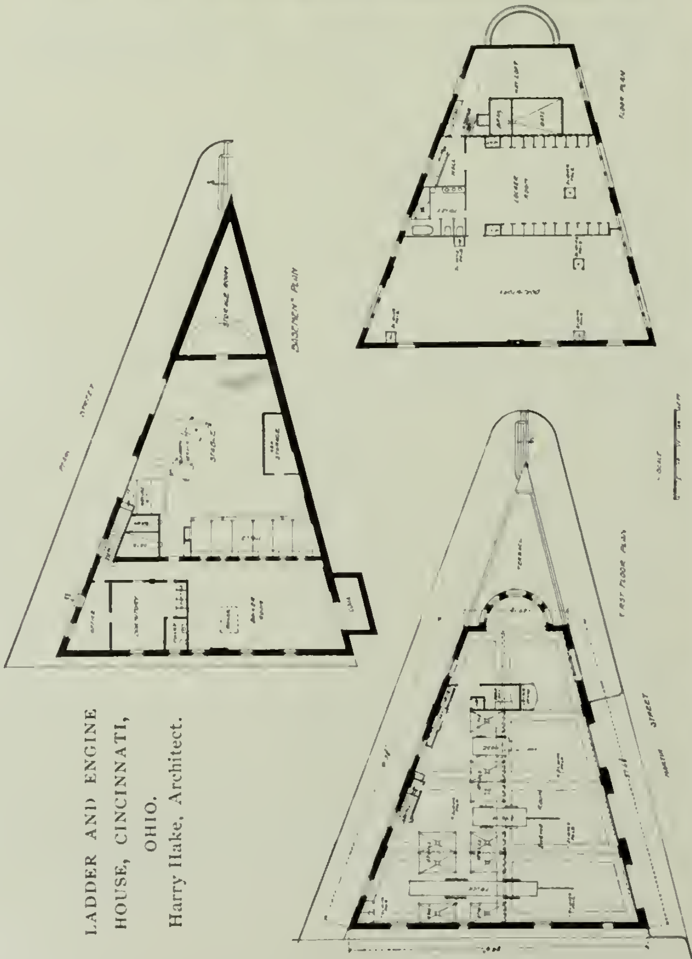


ENGINE HOUSE, BROOKLYN, N. Y.
Adams & Warren, Architects.

ENGINE HOUSE, NEW YORK CITY.
Percy Griffin, Architect.

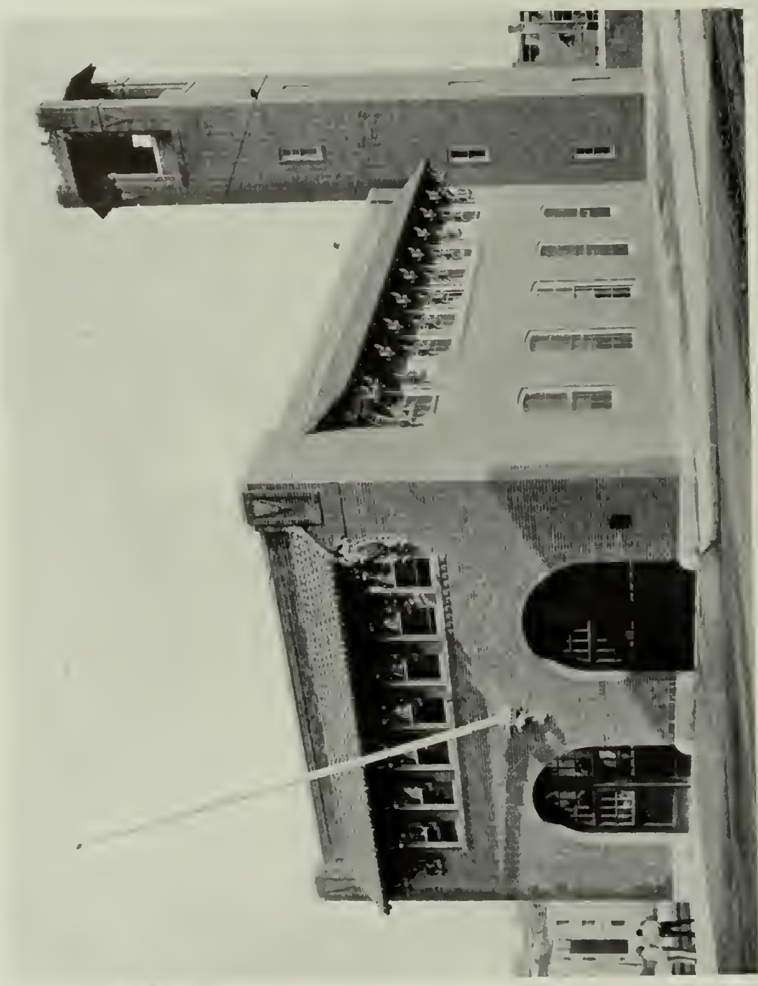


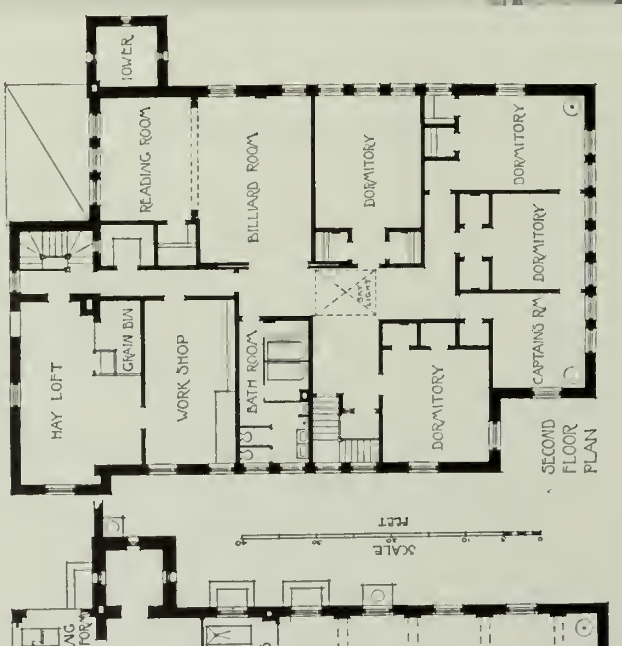




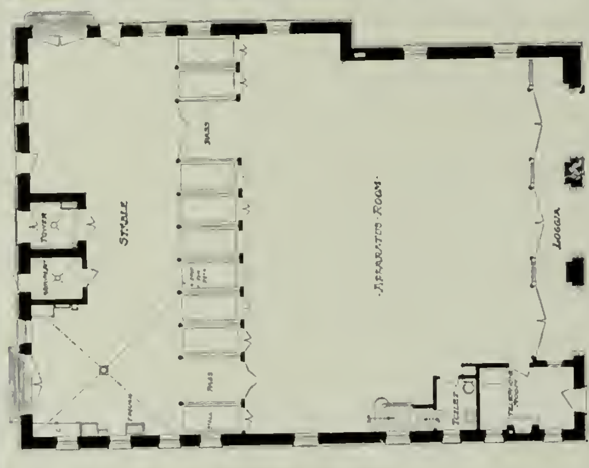
LADDER AND ENGINE HOUSE, CINCINNATI, OHIO.
Harry Hake, Architect.

ENGINE HOUSE, SYRACUSE, N. Y.
Gaggin & Gaggin, Architects.

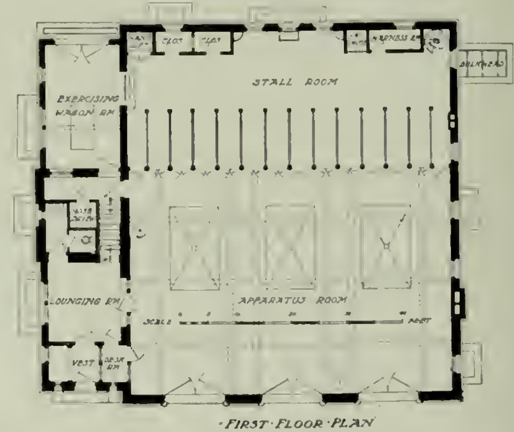




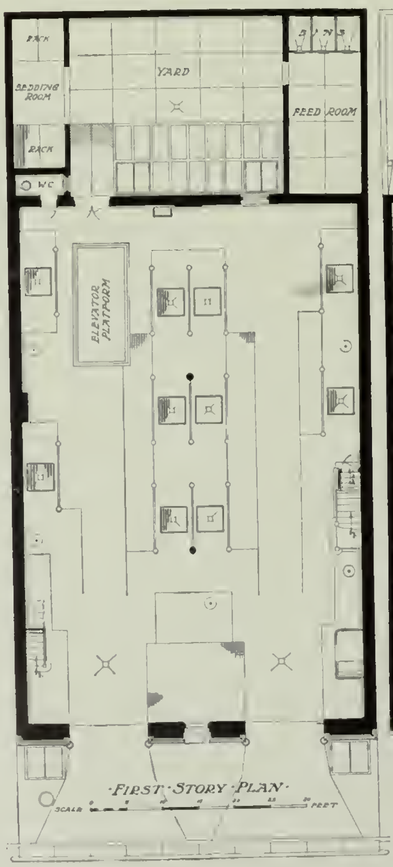
FIRE DEPARTMENT BUILDING, CHELSEA, MASS.
G. HENRI DESMOND, ARCHITECT.

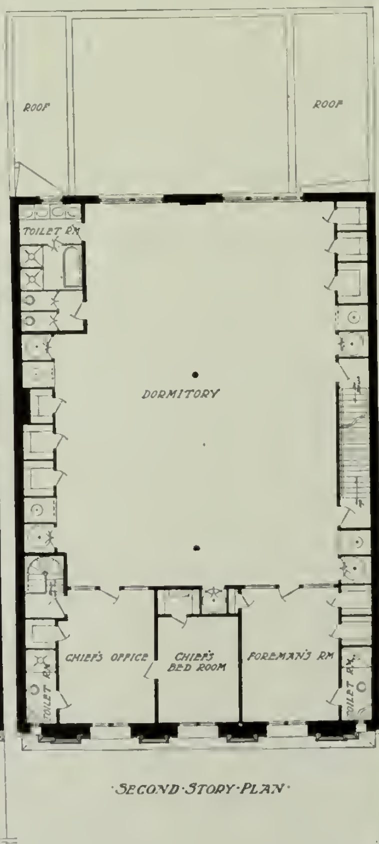


CENTRAL FIRE STATION, KALAMAZOO, MICH.
F. D. VAN VOLKENBURG, ARCHITECT.

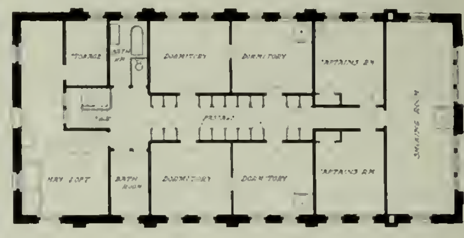


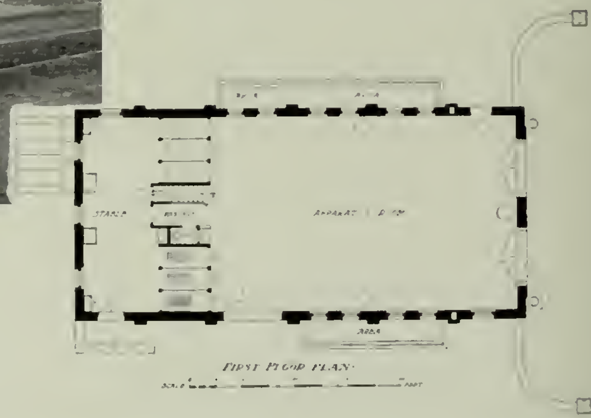
FIRE DEPARTMENT BUILDING, BROOKLINE, MASS.
FREEMAN, FUNK & WILCOX, ARCHITECTS.



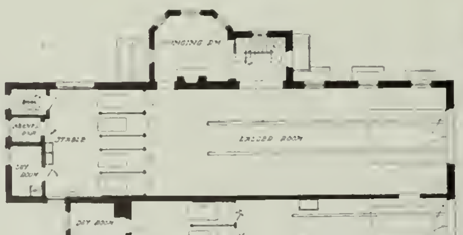


HOOK AND LADDER HOUSE, NEW YORK CITY.
WERNER & WINDOLPH, ARCHITECTS.

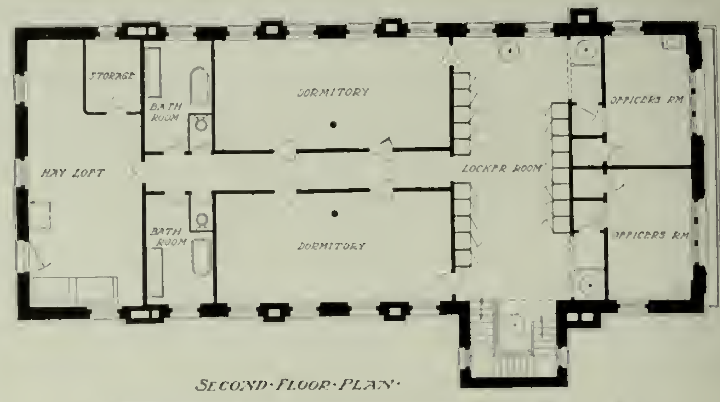


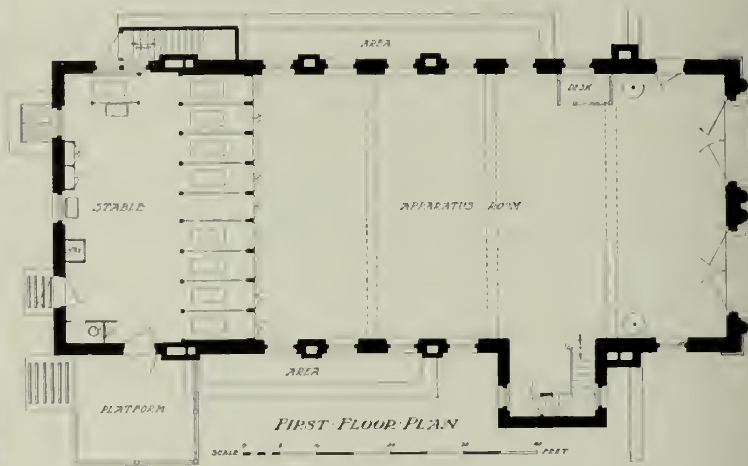


FIRE DEPARTMENT BUILDING, BOSTON, MASS.
JOHN A. FOX, ARCHITECT.

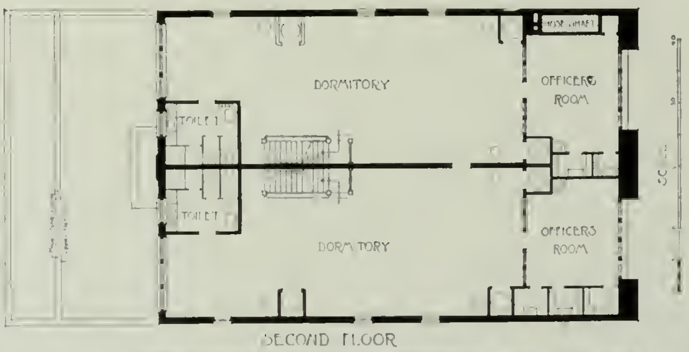


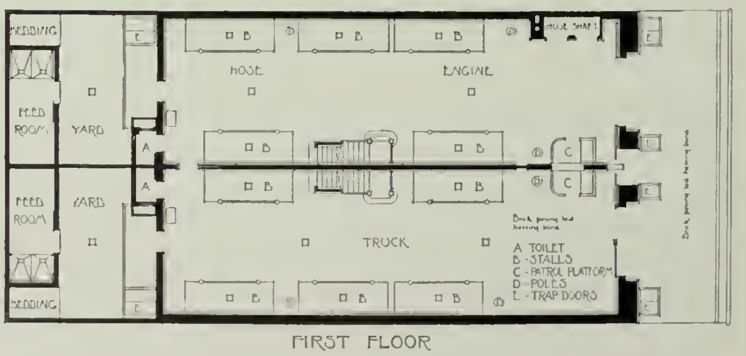
FIRE DEPARTMENT BUILDING, CAMBRIDGE, MASS.
C. R. GRECO, ARCHITECT.





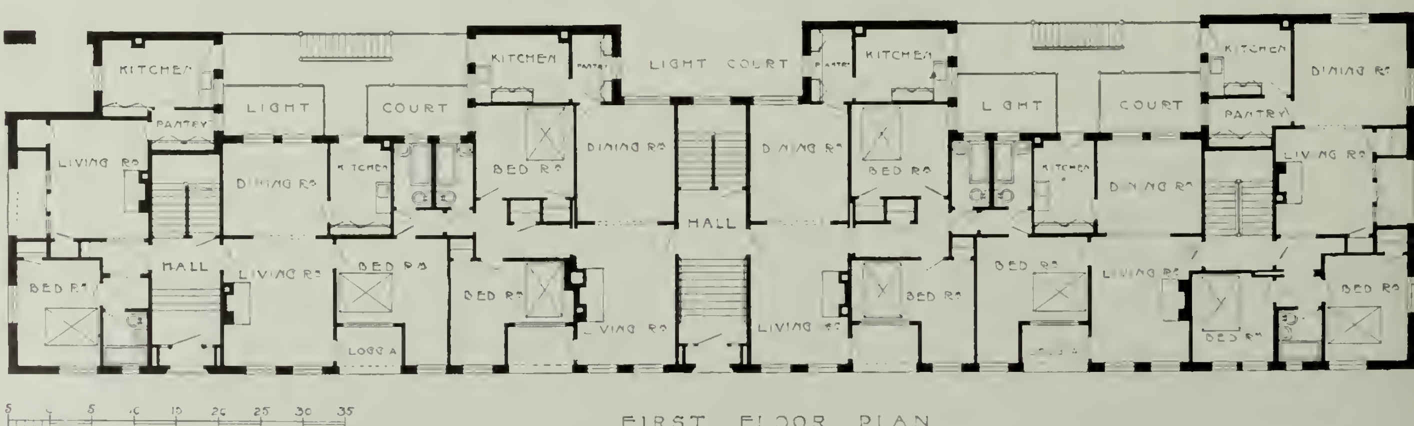
FIRE DEPARTMENT BUILDING, BOSTON, MASS.
JOHN A. FOX, ARCHITECT.





ENGINE HOUSE, NEW YORK CITY.
HERTS & TALLANT, ARCHITECTS.

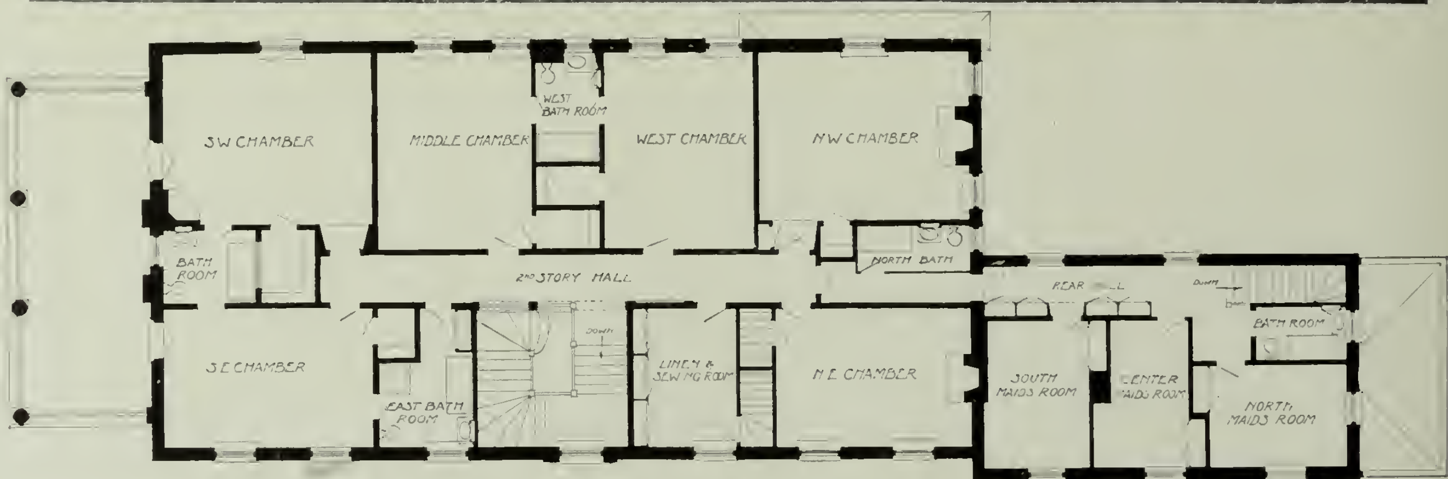
SECOND AND THIRD FLOOR PLANS



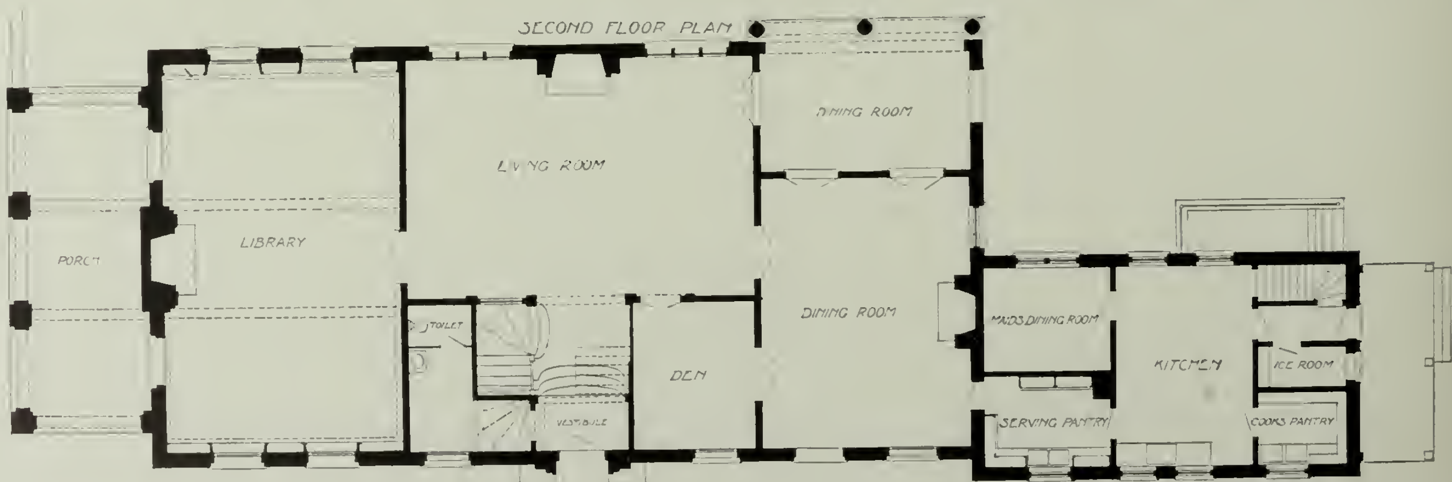
FIRST FLOOR PLAN

APARTMENT HOUSE, PITTSBURG, PA.

JANSSEN & ABBOTT, ARCHITECTS.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

0 5 10 15 20
SCALE OF FEET

HOUSE AT LIBERTYVILLE, ILL.
HOWARD VAN D. SHAW, ARCHITECT.

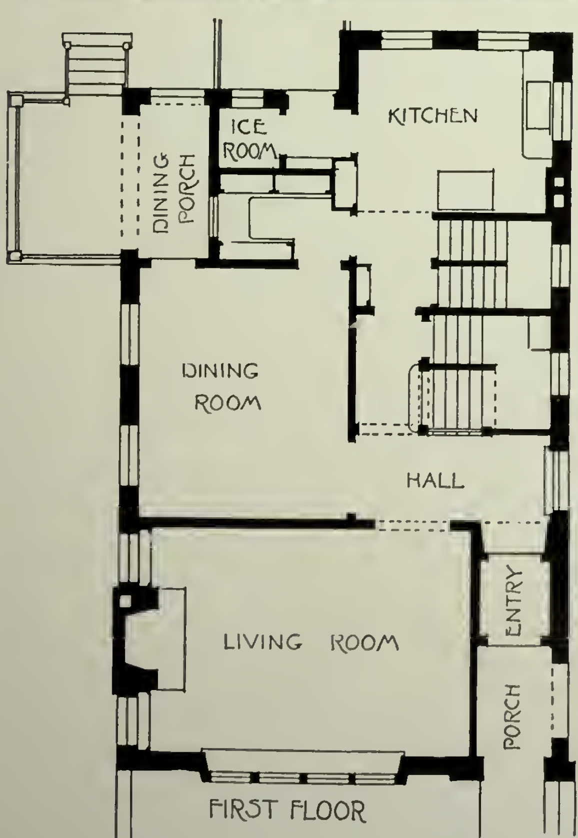
HOUSE AT LIBERTYVILLE, ILL.
HOWARD VAN D. SHAW, ARCHITECT.

HOUSE AT LAKE FOREST, ILL.
HOWARD VAN D. SHAW, ARCHITECT.

HOUSE AT LAKE FOREST, ILL.
HOWARD VAN D. SHAW, ARCHITECT.

FIRST FLOOR PLAN

HOUSE, WOODLAWN AVENUE, CHICAGO.
HOWARD VAN D. SHAW, ARCHITECT.

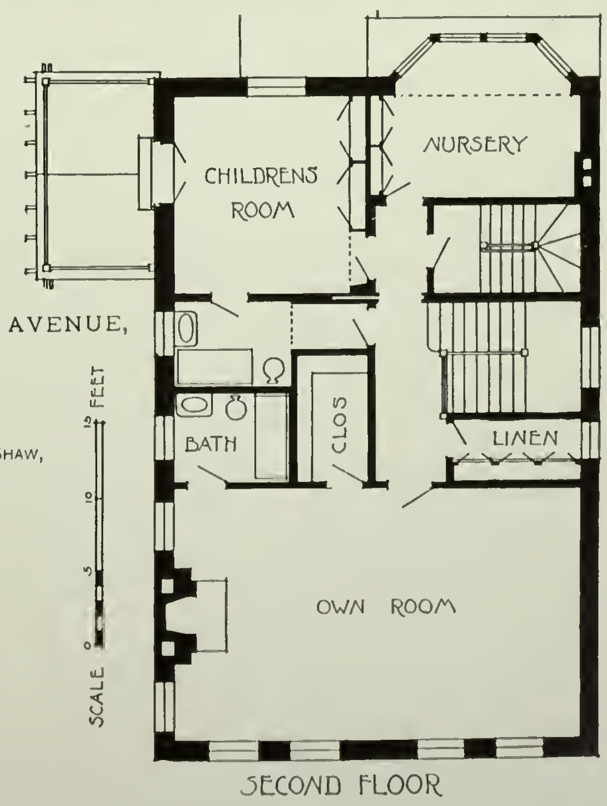


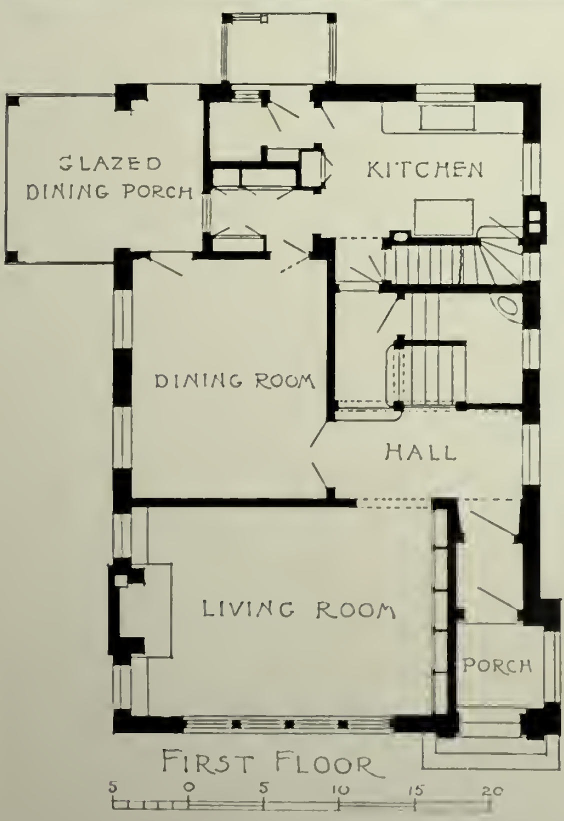
HOUSE, KENMORE AVENUE,

CHICAGO.

HOWARD VAN D. SHAW,

ARCHITECT.



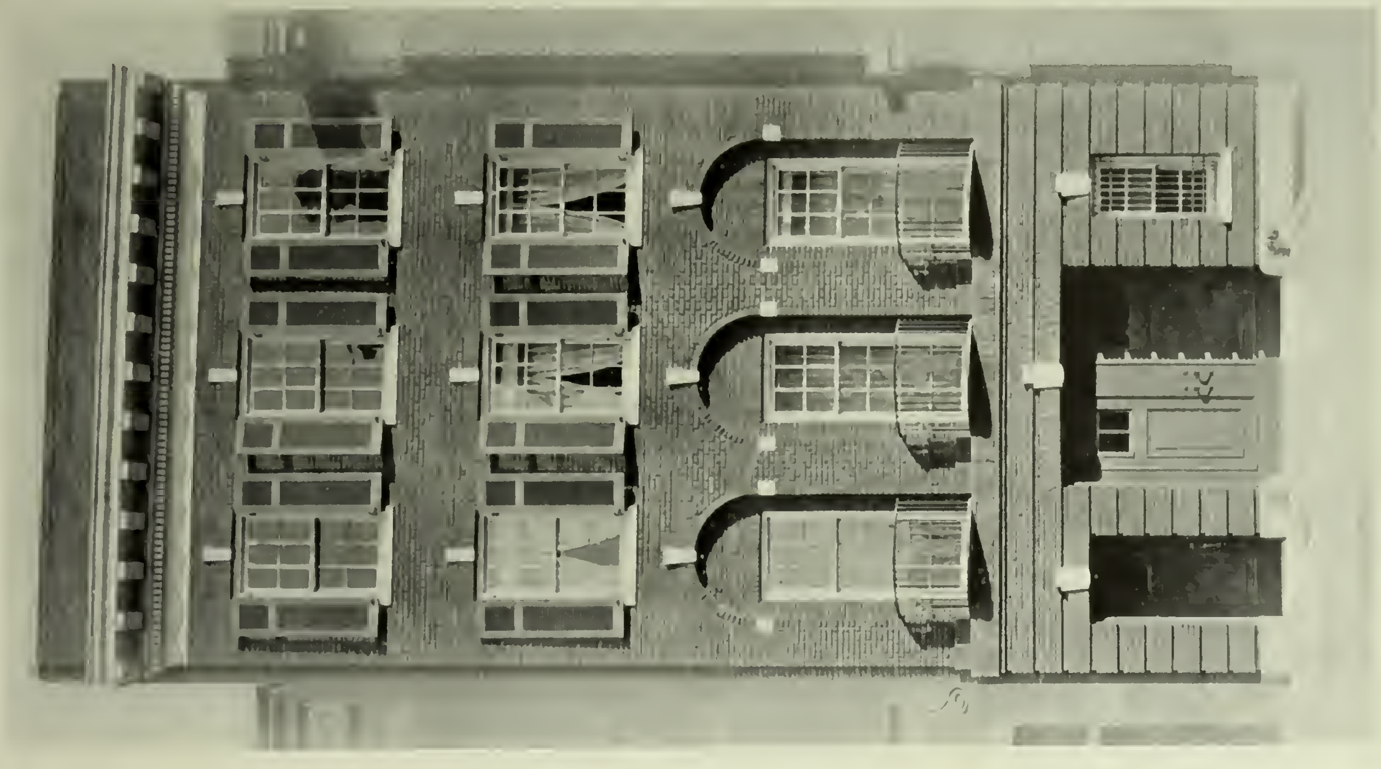


HOUSE, KIMBARK AVENUE,

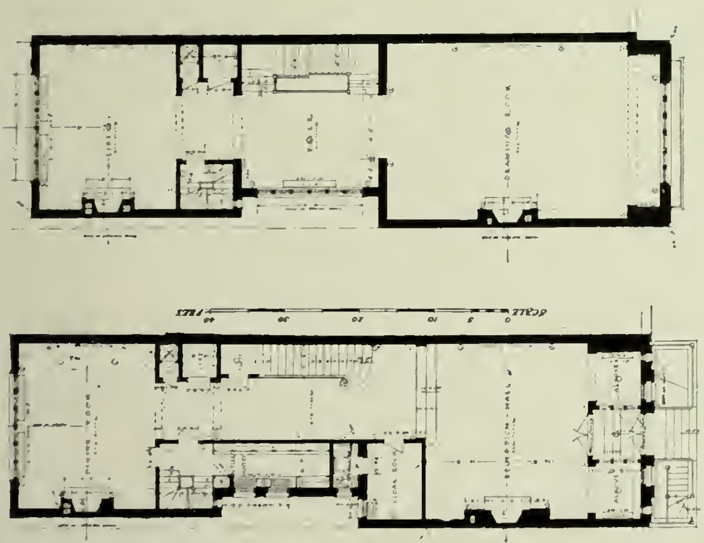
CHICAGO.

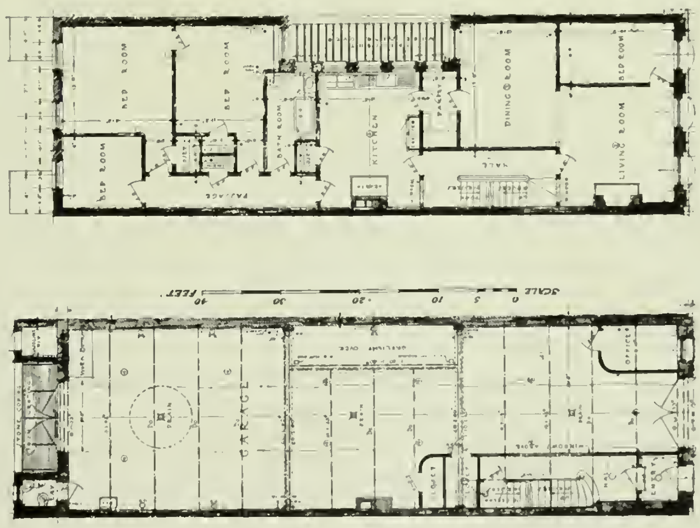
HOWARD VAN D. SHAW,

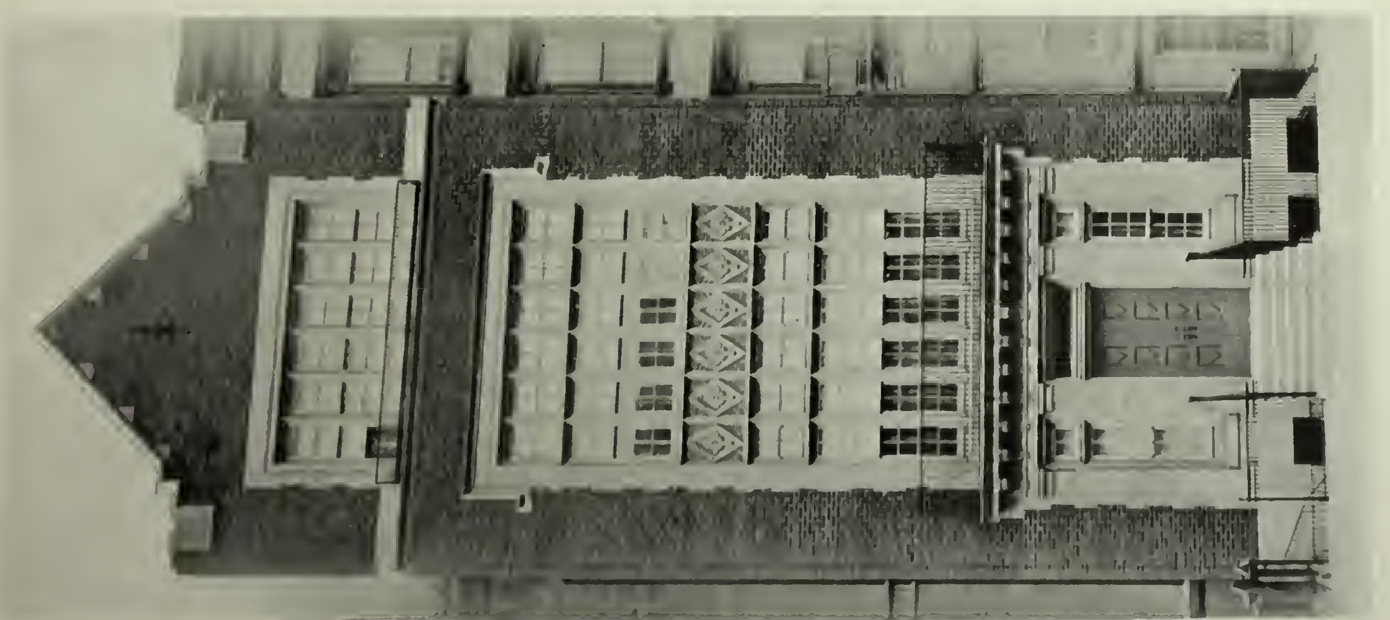
ARCHITECT.



APARTMENT AND GARAGE, EAST 69TH STREET, NEW YORK CITY
ALBRO & LINDEBERG, ARCHITECTS.



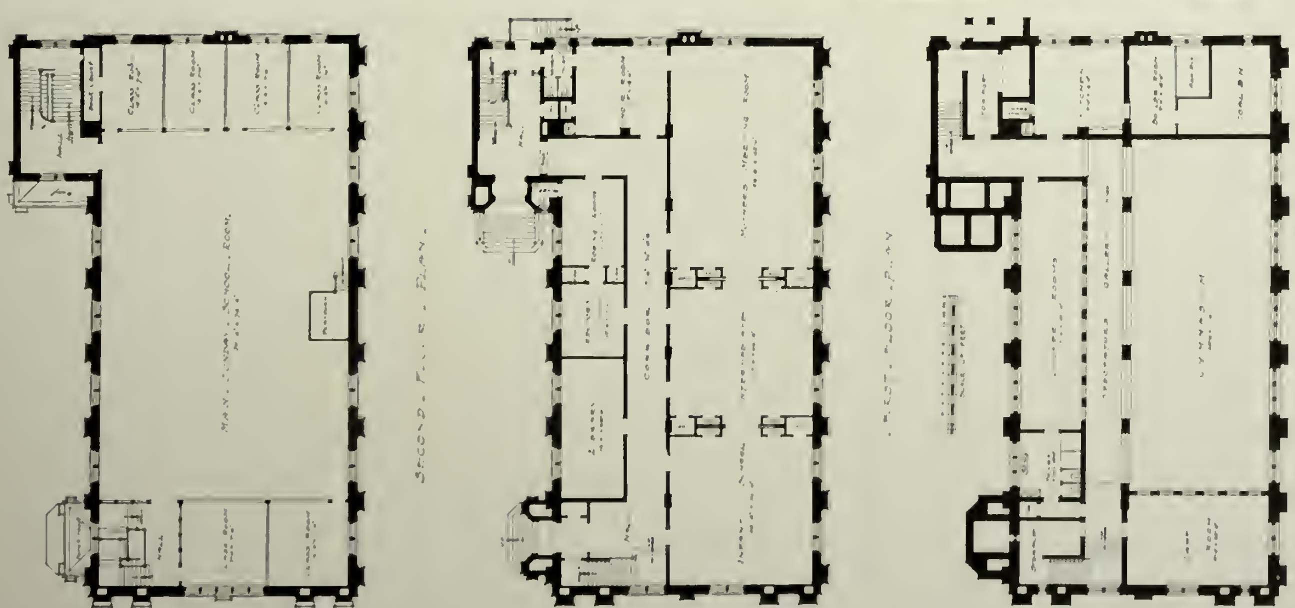




HOUSE. EAST 55TH STREET, NEW YORK CITY.
ALBRO & LINDEBERG, ARCHITECTS.

CHAPEL OF THE CHURCH OF THE HOLY APOSTLES, PHILADELPHIA, PA.

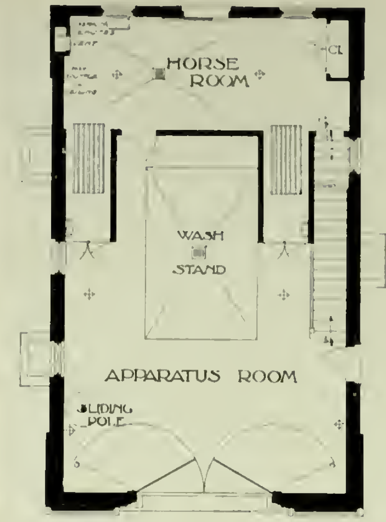
THOMAS, CHURCHMAN & MOLITOR, ARCHITECTS.



SECOND FLOOR PLAN.

FIRST FLOOR PLAN.

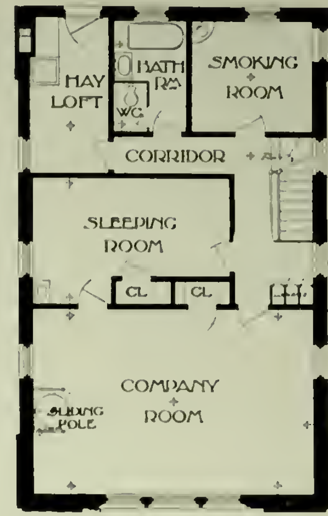
BASEMENT PLAN.



' FIRST' FLOOR' PLAN '

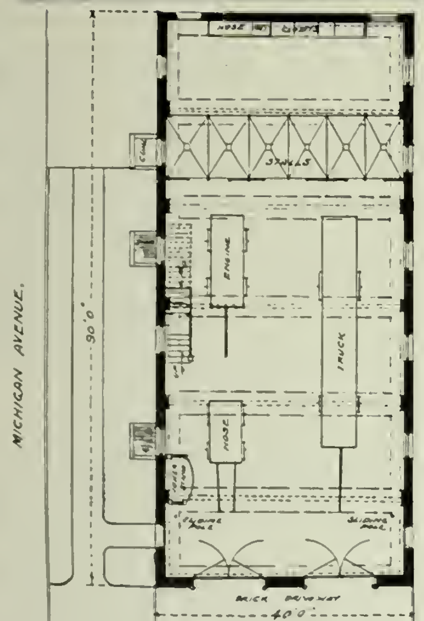
10 FEET

ENGINE HOUSE,
BEVERLY,
MASS.
Kilham & Hopkins,
Architects.



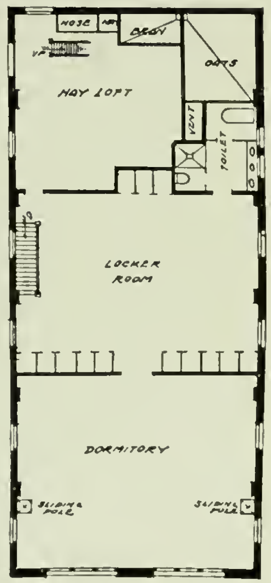
' SECOND' FLOOR' PLAN '

10 FEET

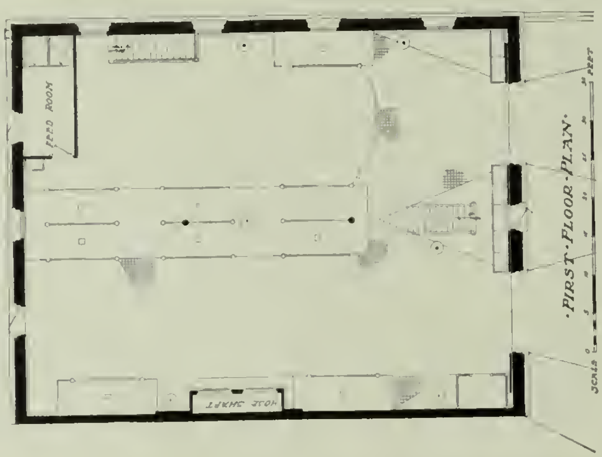


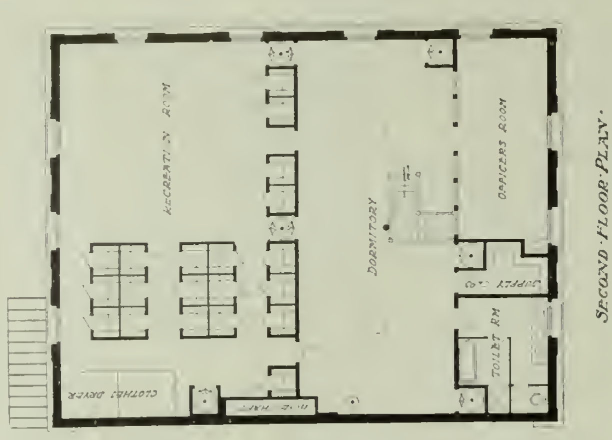
FIRST FLOOR PLAN.

ENGINE HOUSE,
CINCINNATI,
OHIO.
Harry Hake,
Architect.

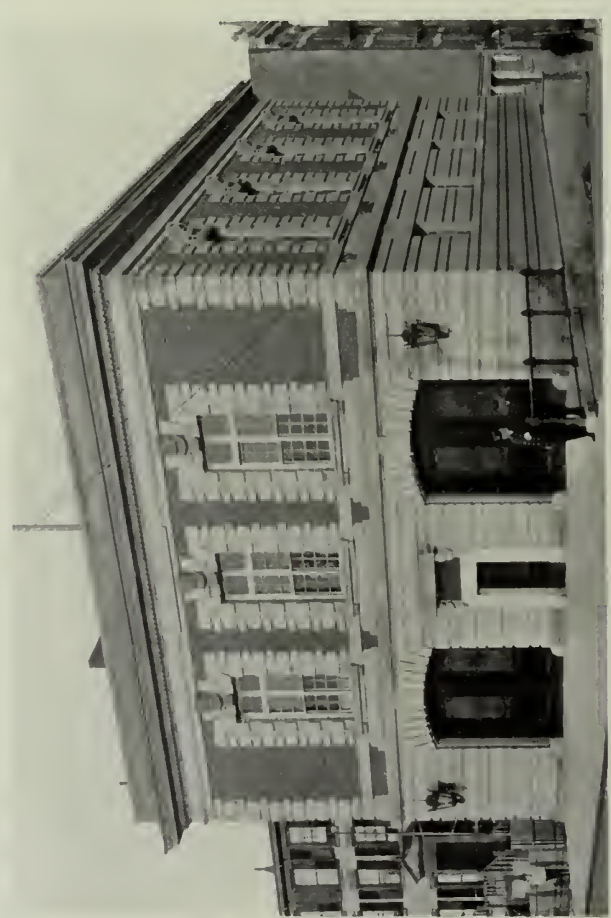


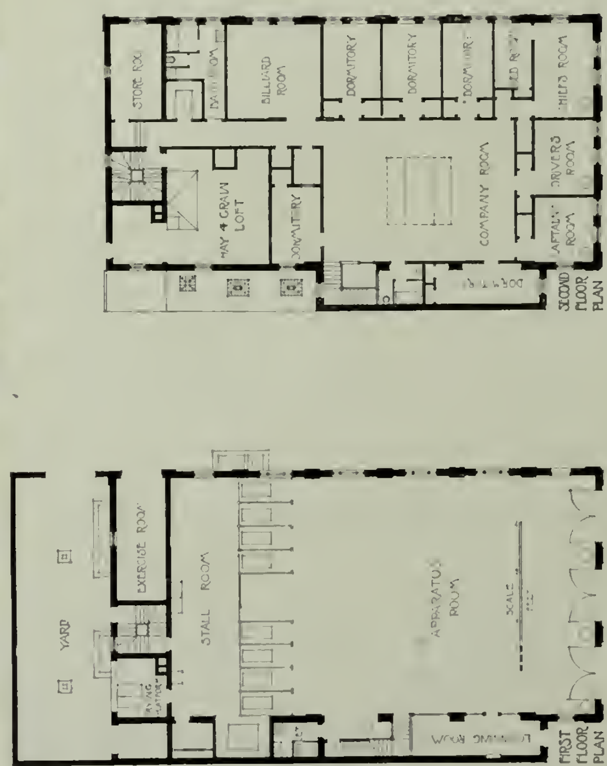
SECOND FLOOR PLAN.



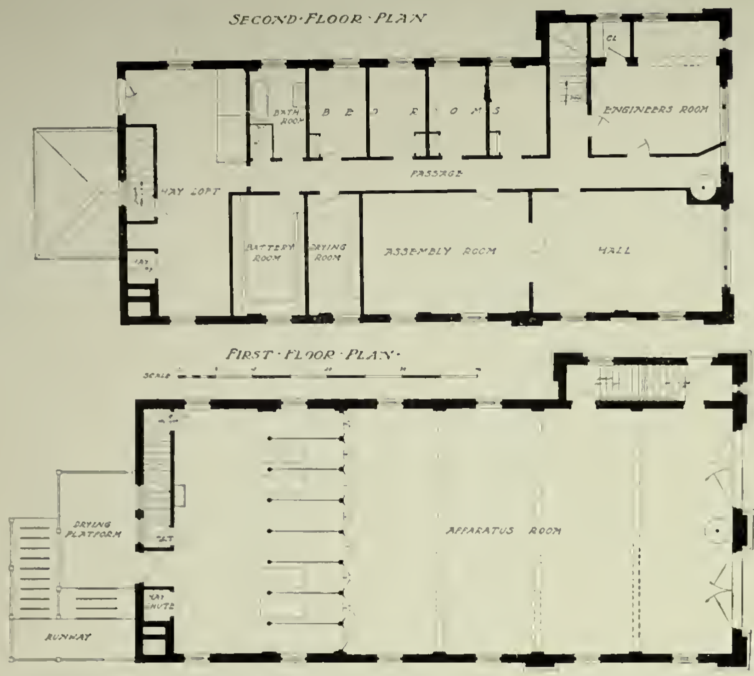


ENGINE HOUSE, NEW YORK CITY.
Edward Pearce Casey, Architect.





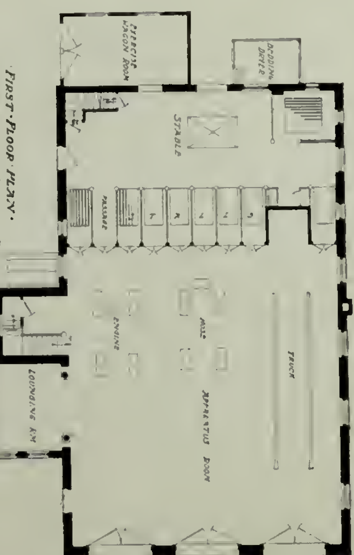
CENTRAL FIRE STATION, CHELSEA, MASS.
G. Henri Desmond, Architect.



FIRE DEPARTMENT BUILDING, NORWOOD, MASS.
Allen & Collens, Architects.

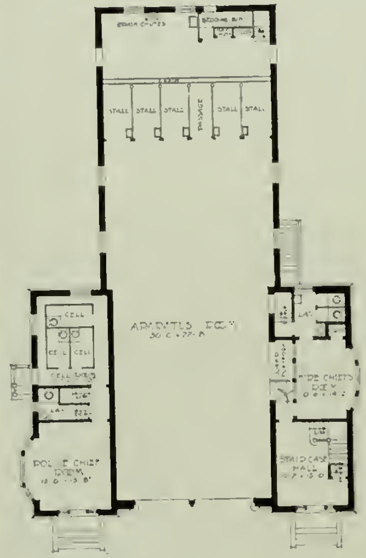
FIRE DEPARTMENT BUILDING, NORTH BEVERLY, MASS.
Cooper & Bailey, Architects.

FIRE AND POLICE STATION, NORWOOD, OHIO.
Rapp, Zettel & Rapp, Architects

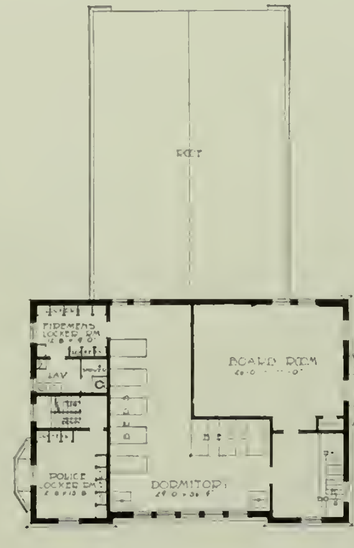


FIRST·FLOOR·PLAN·

SECOND FLOOR PLAN



FIRST FLOOR PLAN

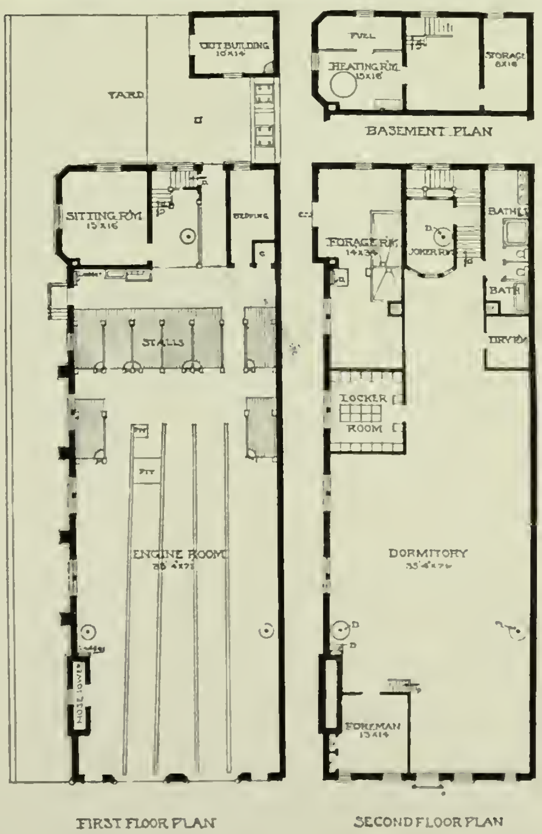


SECOND FLOOR PLAN

FIRE DEPARTMENT BUILDING, REVERE, MASS.
Penn Varney, Architect.

in parts of the country where Fire Department Buildings are necessary, they are receiving a certain amount of attention, as the illustrations accompanying this article testify. But the field is still neglected, and there seems even to be disregard for conditions in some of the designs which are here presented.

The present phase of architectural education is based upon a very sane and plausible premise, i.e., that all good architecture has and should express the conditions of its period and place, and that therefore modern architecture in order to have lasting merit should do the same. This is undeniable. But the resulting corollary is perfectly false and undesirable, i.e., that modern architecture, being modern, should resemble nothing which has antedated it. As a matter of fact, structure to-day has the same elements as in the past, those of vertical supports, and horizontal or arched spanning of voids. Stone and brick and wood are assembled as they have always been assembled, and iron alone has broadened its possibilities. Few new structural forms have occurred except in the minor details, which have been unduly exaggerated; and it is extremely doubtful if many will appear at any time. But from this erratic reasoning in relation to new conditions, most of which do not exist, there has arisen a series of the most uncouth forms, especially in parapet terminations, and in corbeling and brackets, which are apparent in the modern buildings. A desire to express in a new manner induces exaggeration in every factor, and it is plain that exaggeration is the keynote of the work of many of the younger men in American architecture. If power is desired, mass and scale are exaggerated — with a monumental forgetfulness that all power has restraint as a prominent factor. If detail is desired it is exaggerated with a fine unconsciousness that detail should accent, not oppress. If mass is desired its bulk is exaggerated with a naive ignorance that mass is relative to its environment and has no power of expression without comparison with other masses. As a result there is to be found in most modern buildings a disregard for their environment, a scale much too large for their mass, and detail that is crude, however well intentioned. Any designer who has gone through the process of designing first in two dimensions, and later in three dimensions, finds by experience a marked difference in the method of determining scale in the two processes. In designing in two dimensions the smallest detail sets the scale of the pattern; no matter how large the repeat, or how definite the spot, the work must be brought to the scale of the smallest details. In designing in three dimensions a marked change is manifest. The scale is set by the smallest geometric solid, unless that solid is so small that it becomes a part of a design in two dimensions rather than part of a design in three dimensions. That is to say, in the assembling of solids there are two methods of attack — either one solid becomes so preponderant in mass that all other solids become associated details of it — or there are a number of solids similar in their respective masses, even if different in form, in which case the smallest solid sets the scale and the larger solid must be detailed down to it. In the first case there is a dominant — in the second a harmony of solids. It is always much easier to design with a dominant than it is to group solids of similar bulk. The study of descriptive geometry in the architectural schools has as one of its purposes an appreciation of such problems. When the dominant mass is adopted, large and heavy details do not add to its power, but detract from it. When the associated solids are chosen, heavy and coarse detail is in too large a scale for the detailing of the smallest solid. Despite these well known facts the addition of incongruous solids appears constantly in otherwise creditable designs; for instance, small projecting rooms with circular ends, peculiar masses at the tops and corners of towers, and on parapets; and heavy handed detail is everywhere apparent.



FIRST FLOOR PLAN SECOND FLOOR PLAN

FIRE DEPARTMENT BUILDING, WASHINGTON, D. C.
Appleton P. Clark, Jr., Architect.

American architecture has often been praised for its virility. It may be suspected at times that when this compliment comes from France or Italy, or even from England, it is a transparent subterfuge caused by a lack of other virtues which could be extolled. As a matter of fact, virility is an aggressive virtue and by no means equal to restrained power. There is quite sufficient virility in Greek work and in Renaissance, and in Gothic; but that adjective is never the first which is applied to the masterpieces of the past. Much of American work has the virility which appears in the Palais de Justice at Brussels. There is actually a much more exact word for it, that of crudeness. The expectation of a decade ago, which seemed justifiable when it was considered that so many young men who had received architectural training were entering the profession, that American architecture would rapidly improve, has not been adequately realized. Perhaps it is too soon to criticize the lack of performance. Certainly, as a whole, the buildings of the country are better than they were, and planning especially has improved, but in much of the work there is existent at present a peculiar phase — that of making details much too large for the masses they are supposed to ornament. They overpower masses, disturb shadows, break up surfaces, destroy edges. The requirements of a building force upon the architect a relation of the plan to the size of a man. The one portion of the design in which the architect has an opportunity for imagination, for individuality, he treats as if the building were for Brobdignagians, and unloads upon it a collection of ordinary and often uncouth forms grown to an abnormal size; such as quoins which would strengthen huge façades, and projections, but which would disturb any wall, on thirty foot fronts. Keystones bulge and spread where no keystones are needed. Voussoirs are accented at the expense of the arch line, destroying it. Corbels and brackets which would hold up five stories occur under a copper gutter moulding. Minor structural factors oppress and overcome the main structural masses, and there is very little study of mouldings. What is the cause for this manifest lack in American architecture? There are several causes and they seem to have joined forces to produce crude work.

ENGINE HOUSE, CINCINNATI, OHIO.
Harry Hake, Architect.

First, there is the fact that the schools do not teach detail adequately — that drawings are made to a small scale and that masses alone are indicated on the drawings — and incidentally that great stress is laid on shadows — which are after all, though important, a secondary consideration to solids and voids. As a natural result of this teaching, the architect, untrained in detail — except that he has drawn the capitals and entablatures of the orders — enlarges the detail upon a drawing of ⅛ of an inch to the foot exactly as if it were an enlarged photograph, and leaves it in that condition. He does not know how to adapt it to full size and can only learn by careful observation and experience. The argument is that if detail is well placed and looks well on the scale drawing it must look well if pentagraphically enlarged. Why not apply the same argument to sculpture and mural painting? Ask any sculptor if he has difficulty in getting the spirit of his small sketch into the figure of heroic size, and if he merely enlarges the small sketch by the aid of calipers.

Yet this is exactly what the American architect appears to be doing, and as a result there is no work in the world so crudely, barbarously detailed as American work. The final reason for crude detail is the mistaken idea that big things are impressive, indicate strength and power, and show breadth of conception. But this is the case only when they are carefully and justly related to each other. A big nose is not considered desirable — huge ears invite invidious comparisons. The whole design must have well considered relation of all its parts. Excess in any direction tends towards monstrosity.

One of the most interesting features in the Fire Department Station is that of the hose tower, which is for the purpose of allowing the hose to dry before being coiled. It is identical in character with the bell tower of an Italian church — requiring only slits for light in its entire height, but demanding ample air at the top. It is in fact a plain square shaft with all its possibility for ornamental light and shade, etc., at the top. It is perfectly natural that it should resemble the Italian square towers, for it has similar requirements. It does not seem necessary to have such eccentricity develop at the top of this tower as is at times apparent in some designs.

It has been mentioned that Fire Department Buildings are of two or at most of three stories in height, and have considerable wall area. They are not, therefore, with cased steel piers, and there is no reason for grouping the windows of two stories into one as an expression of structure, and such a treatment dwarfs rather than enhances the building. The large entrance door openings are the most important factors in the façade, and the treatment around and above these openings affords admirable opportunity for interesting detail. These openings permit the use of arches, and in fact arched treatment of openings either throughout or at chosen points in no way interfere with adequate light, as is so often the case in utilitarian buildings. The designs accompanying this article are from the best of the buildings erected recently. Advantage has been taken of the possibilities of the problem and the results are in some cases of exceptional merit. They indicate that it would be wise for municipalities to realize that Fire Department Buildings present possibilities which occur in but few civic buildings of small size, and that they can be made attractive and express an appreciation of civic care which should be apparent in all city work.

It is gratifying to note that Civic Improvement Societies, Improvement Leagues, etc., are increasing in every community, and that men qualified to advise are joining in the desire to better the type of buildings which are erected; but in most cases these societies are made up of private individuals, who have little to say in the actual allotment of work, and whose influence is one more of general education than of actual executive power. Without doubt their influence carries weight, but the officials of a city need to have object lessons at hand before they can learn to discriminate between good and mediocre work. It is not unusual to find the best public spirit amongst trained politicians, but the knowledge of admirable architecture is hardly to be expected in that quarter. This is in no sense derogatory to their good-will or intention, it is merely the acknowledgment of an existing condition, that is, that good taste in architecture is a sense acquired by study and not an accidental accomplishment. Therefore there is no more valuable means of education towards the erection of good buildings in the future than the careful study of similar buildings in the present, and the building of object lessons which may be compared by the public with the less studied buildings of the past. The Fire Department Building is in a sense a unique opportunity, being devoid of serious difficulties, and of a size and character which permit excellent results, and it will fully repay the study which may be devoted to it. That study has been thoroughly performed as far as the plan and utilitarian requirements are concerned, but the exteriors still leave something to be desired, and it is hoped that the problem will appeal to architects in the future more than it apparently has done in the past.

The following comprises a brief description of some of the buildings illustrated.

HOOK AND LADDER HOUSE, WEST 63d STREET, NEW YORK CITY. WERNER & WINDOLPH, ARCHITECTS. PLATE 60. This building was designed to meet the conditions imposed by the increasing cost of land and construction, and with the further desire to concentrate a large amount of fire apparatus in a given locality. The plan consequently provides for the storage of from six to eight engines in the basement. These engines are raised to the first story by the means of a two deck electric elevator, the upper deck being at the first floor level. The apparatus on the first floor deck having left the building, the engines in the basement can be lifted to the first floor level in fifty-five seconds. The third floor of the building is used as a recreation room and gymnasium.

ENGINE HOUSE NO. 5, CHELSEA, MASS. G. HENRI DESMOND, ARCHITECT. PLATE 59. On the second floor is a workshop for the men, where they may indulge themselves in handicraft hobbies. A large bell is hung in the upper part of the hose tower. The cost of the building was about $37,000.

CENTRAL FIRE STATION, CHELSEA, MASS. G. HENRI DESMOND, ARCHITECT. PAGE 122. The cost of the building was approximately $45,000.

HOSE HOUSE, BEVERLY, MASS. KILHAM & HOPKINS, ARCHITECTS. PAGE 121. Plan for a one company house with provision made on the first floor for a spare piece of apparatus. The main doors are 12 feet wide. The building cost about $6,500.

FIRE DEPARTMENT BUILDING, VILLAGE OF WYOMING, OHIO. GARBER & WOODWARD, ARCHITECTS. PAGE 117. The building provides for a volunteer fire department and the club room shown on the second floor is where the members hold monthly meetings and smokers, usually after a fire drill. The small wings are for the sprinkling carts, wagons, etc., which are owned by the Village. The second floor provides a chamber where the Village Council meets.

ENGINE HOUSE, EAST ORANGE, N. J. WALKER & HAZZARD, ARCHITECTS. PAGE 118. The building cost $8,000 complete. The only unusual feature about the plan is that the stairs are placed in a projecting wing, leaving the floor space entirely clear.

ENGINE HOUSE, NORWOOD, MASS. ALLEN & COLLENS, ARCHITECTS. PAGE 123. The problem in this case was to properly express the openings for the engine and hose wagon on the façade, together with an ample staircase to the second story, opening off the side street. This naturally did away with any attempt at the expression of an axis and the architects frankly threw the doorways off center, and so arranged the main piers as to include the staircase at the side. The second floor has a large meeting room for the volunteer corps. The total cost was $14,300.

COMBINATION ENGINE AND TRUCK HOUSE, WASHINGTON, D. C. APPLETON P. CLARK, JR., ARCHITECT. PAGE 125. The exterior of the building is pebble-dash on brick. The roof is of red Spanish tile. The first floor of the interior is finished with painted brick walls. The cost of the building was about $25,000.

FIRE STATION, NORTH BEVERLY, MASS. COOPER & BAILEY, ARCHITECTS. PAGE 123. The cost of the building was about $20,000. The basement provides accommodations for the drying racks, store rooms, company room, kitchen and toilet rooms.

FIRE AND POLICE STATION, NORWOOD, OHIO. RAPP, ZETTEL & RAPP, ARCHITECTS. PAGE 124. The building is of light gray brick with terra cotta trimmings. The total cost was $18,000.

CENTRAL FIRE STATION, KALAMAZOO, MICH. F. D. VAN VOLKENBURG, ARCHITECT. PLATE 59. The stable, with walls of glazed brick, is entirely shut off from the remainder of the building with glass doors and transoms. The heating apparatus is placed under the front of the building away from the stable. The stall partitions are of 2 inch plank with rounded edges, 2 inches apart for ventilation. The cement floors in stalls are recessed 4 inches and sloped to cesspool, peat being used for bedding. The total cost of the building was $22,640.

Editorial Comment and Miscellany.

MR. PERKINS AND THE CHICAGO BOARD OF EDUCATION.

THE city of Chicago has lost the services of one of the few men in this country who has brought to bear upon the problems of school construction a mind professionally trained, and who by hard and intelligent work has made himself an expert on the subject. Dwight H. Perkins, a well-trained and experienced architect, has been removed from office through the influence of one who might fairly be classed as an amateur with political experience.

How long our people will take to learn the evils and dangers of governing through amateurs it is impossible to say. In this respect we are years behind every European country; but we are beginning to awake to an understanding of this matter, and every action such as this of the Board of Education of Chicago is one more nail in the coffin of government by amateurs. One may have at least this satisfaction in accepting such a situation.

Mr. Perkins held a position of great responsibility and of great difficulty, having the charge of the school buildings, their erection, care and maintenance. To put it briefly and in a popular way, this laid him open to the criticism of all who have children, of all who teach, of all who take care of the buildings, of all who build, and of all who make repairs. This is a fruitful field; nearly every one in a city comes in one or another of these classes and has cause at times to believe — sometimes with reason and sometimes not — that a particular part of the complex duties of the man in charge is not being well done.

Any man who fills such a position must expect unthinking criticism and be prepared patiently to convert his critic by helping him to understand — he must expect thoughtful criticism, based on wrong premises or lack of knowledge, and be prepared to meet this in the spirit in which it is meant — he must expect well-founded criticism, and be prepared to acknowledge himself wrong promptly and effectively — he must expect malicious criticism, and be prepared to be silent under it. If however he is conscious that he is giving professional service, the best that is in him, and knows that the work under his charge is growing, improving, going forward steadily, as the tide rises, he has a right to expect the support of those who are in the responsible positions, to expect that these will at least have sufficient intelligence to understand the difficulties, help to overcome them, to appreciate the good service and encourage it. Many of those who are most active in the criticism of public servants stand outside the arena and take no share in the fight. Others stand outside and do not take sufficient interest in the game even to criticize. The critics criticize these for staying outside, and then turn and rend first one side and then the other in the contest whose strife they are enjoying. It is little wonder that capable business men, men of affairs, professional men, are shy of that conspicuous field where they may hardly expect the support of those who ought to be fighting with them, and where they must submit to having their best efforts belittled, their errors magnified, and their motives and morals questioned.

In the present case it is perhaps impossible for one at a distance to know all the details, to know just what charges were made, the competency of those who made the charges or the accuracy of the charges made; even one on the spot can rarely get to the bottom of such matters and find out definitely whether or not some personal animus is behind it all. Of this however one can be sure, for it is a matter of record — under the administration of Mr. Perkins the intelligent study of school problems has advanced rapidly. Chicago's modern schools are in many respects models of their type for our large cities. There has been year by year, under Mr. Perkins, a steady improvement in planning and construction, and this is a great thing to say for a period of years that has been filled with unrest, uncertainty, new educational problems, new demands, hygienic and esthetic — all of which have modified school requirements and school plans. When to these various new requirements the personal element is introduced, a reasonable theory may quickly become a fad, and its supporters enthusiasts or fanatics. It is in the air, and each one of us knows the enthusiast, for open air, for industrial work, for vocational high schools, for popular use of assembly halls, for pictures, sculpture and color, for nurses and doctors, for feeding the anemic, for teaching the mothers. Divide these into all their variants and consider what the task is of the man who plans, builds, maintains, repairs or equips the schools for these manifold interests.

Mr. Perkins was doing this work and doing it well, and he was removed by a board composed of amateurs, of whom probably no one was competent to pass a judgment on Mr. Perkins' work. This board had ample opportunity to inform itself in regard to Mr. Perkins' competency. There is a small group of men who have had experience similar to that of Mr. Perkins, and extending over longer periods. Mr. Snyder in New York, Mr. Ittner of St. Louis, and Mr. Sturgis of Boston are known more or less throughout the country for their knowledge of school planning and construction. Any one of these men could have advised the board so that they might have acted with intelligence. In March Mr. Sturgis wrote the president of the Board of Education, and said in part:

"Those of us who have been studying critically and intelligently the construction and equipment of school buildings during the last ten or twelve years believe that there are four cities where the best, most constructive, and most thoughtful work is being done. This work has helped to establish standards elsewhere, and the steady growth of intelligent school building is largely due to the work of New York, St. Louis, Chicago, and Boston. To the work done in Chicago Mr. Mundie contributed very valuable thought, and his work has been intelligently carried on by Mr. Perkins, and I believe that a careful inquiry into the work done by Mr. Perkins, by those who are really competent to judge, would show that the city of Chicago has been receiving exceptionally good service from him."

Mr. Sturgis added that as a public servant his services were at their disposition.

The president of the Board acknowledged the letter courteously, and proceeded to press his charges and secure the dismissal of Mr. Perkins.

The Western Architect stated that "the reading public of Chicago have found that their school board is headed by a president who has no artistic perception, no knowledge of the connection between architectural art and the moral or physical development of the pupil" — and they might have added, nor even common intelligence *The Western Architect's* summary of the mental equipment of the president of the board may be accurate, but that the reading public of Chicago have found it to be so is quite another matter. When the reading public of this great, but inconceivably careless country, does find out these things, they will stop. Until they find out, they will continue. The more flagrant the instances are, the more quickly they will find out. For this at least one may be grateful to men of the stamp of this president of the Board of Education; for such a man will open the eyes of the public. In the meanwhile it is Chicago, not Mr. Perkins, that suffers.

HOUSE AT COLUMBUS, OHIO.
Roofed with Ludowici-Celadon Company T-14 tile.
Frank L. Packard, Architect.

AT THE second annual meeting of the Pennsylvania State Association of Architects, held in Pittsburg recently, the following named officers were re-elected for the ensuing year: David Knickerbacker Boyd, president; Edward Stotz, vice-president; William L. Baily, secretary and treasurer.

The work accomplished by the association during the first year of its existence is highly gratifying, and it promises to become a vital factor in the interests of the profession throughout the state. Architects in the smaller states and towns are manifesting an interest and making application for membership.

The most important business of the session was the report concerning the proposed revision of the building laws of the city of Pittsburg. Through its president, Mr. Edward Stotz, the Pittsburg Chapter of the A.I.A. enlisted the coöperation of twelve of the most important organizations of the city of Pittsburg, who addressed a memorial to the mayor and councils, with the result that a commission was appointed to revise the building code. This effort will be followed by others, which will urge upon the smaller cities the necessity of a revision of their building laws.

DETAIL BY ROBERT C. BERLIN, ARCHITECT.
Northwestern Terra Cotta Company, Makers.

IN GENERAL.

Russell E. Hart, formerly of New York City, and C. C. Motz, formerly of the firm of Howard, Motz & Co., Nashville, Tenn., have formed a copartnership for the practice of architecture, with offices at 227 Sixth avenue, North, Nashville. Manufacturers' samples and catalogues desired.

Ernest F. Guilbert and James O. Betelle have formed a copartnership for the practice of architecture under the firm name of Guilbert & Betelle, with offices at 25 West 32d street, New York, and 917 Broad street, Newark, N. J.

Gustave A. Niehus has opened an office for the practice of architecture at 25 Callahan Block, Dayton, Ohio. Manufacturers' catalogues desired.

Frank W. Cooksey and Fred B. Maxwell have associated for the practice of architecture under the firm name of Cooksey & Maxwell, with offices in the Forsyth Theater Building, Atlanta, Ga.

Arnold W. Brunner has removed his offices to 320 Fifth avenue, New York.

The partnership of Darrach & Beekman, architects, 10 East 33d street, New York, has been dissolved. Jas. M. A. Darrach

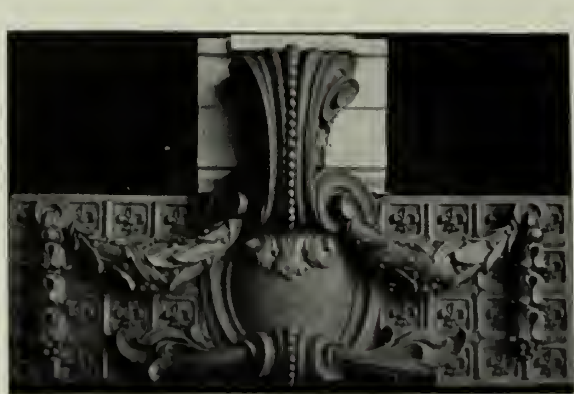
DETAIL BY FERRY & CLAS, ARCHITECTS.
Atlantic Terra Cotta Company, Makers.

DETAIL BY G. AJELLO, ARCHITECT.
New York Architectural Terra Cotta Company, Makers.

and William F. Beekman will continue the practice of architecture at the same address in their individual names.

John H. & Wilson C. Ely announce the removal of their offices to The Firemen's Building, Broad and Market streets, Newark, N. J.

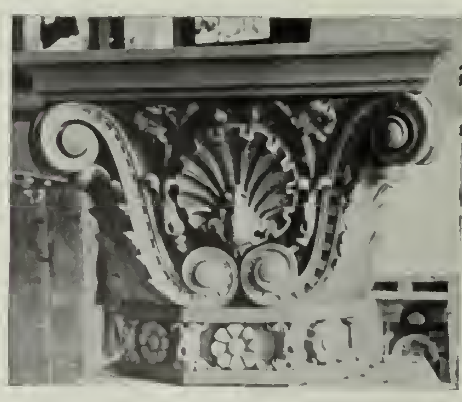
Brick manufactured by the Pearl Clay Products Company of Bradford, Pa., were used in the following named buildings recently erected in New York City : St. Gabriel's School, John V. Van Pelt, architect; Apartment House, Schwartz & Gross, architects; Harpery Hall, Henry W. Wilkinson, architect ; Club House, J. Riley Gordon, architect; Public School, C. B. J. Snyder, architect; Apartment House, Neville & Bagge, architects.



DETAIL BY WHEELER, GALLEHER & STERN, ARCHITECTS.
New Jersey Terra Cotta Company, Makers.

James E. Grunert, architect, has opened an office at 2010 Richmond road, New Dorp, N. Y. Manufacturers' catalogues and samples desired.

The "Peerless Arch" for fireproof floors, made of terra cotta blocks and reinforced with metal and cement, has been placed upon the market by Henry Maurer & Son, New York City. The demand for a combination fireproof floor for long spans between walls or between beams and girders is successfully met with this arch. This combination of materials forms a light and very strong floor arch. The thorough protection of both cement-concrete and metal with terra cotta provides a finished ceiling in which the cement joints do not show through the plastering. The arch



DETAIL BY MAURAN & RUSSELL, ARCHITECTS.
Winkle Terra Cotta Company, Makers.

can be used in every kind of structure — office buildings, residences, factories, warehouses, etc. The cost is low, owing to the simplicity of the method.

The Atlantic Terra Cotta Company will furnish the architectural terra cotta for the following mentioned new buildings: Heidelberg Building, New York City, Henry Ives Cobb, architect; Vanderbilt Tenements, New York City, Henry Atterbury Smith, architect; — in these tenements a considerable amount of polychrome terra cotta will be used ; Municipal Building, New York City, McKim, Mead & White, architects ; Churchill's Restaurant, 49th street and Broadway, New York City, Robert Baer, architect; Nazimova Theater, New York City, Albert Swasey, architect; — this building will be of white mat glazed terra cotta from the water table up.

DETAIL BY KEES & COLBURN, ARCHITECTS.
American Terra Cotta Company, Makers.

A panel executed in colored terra cotta has been placed in the pediment of the Parkhurst Church, Madison Square, New York, McKim, Mead & White, architects. The panel was designed by Harry Siddons Mowbray, and executed by Adolph A. Weinman. The work was furnished by the Atlantic Terra Cotta Company.

The Second Church of Christ, Scientist, Los Angeles, Cal., A. F. Rosenheim,

DETAIL BY FRYE & CHESTERMAN, ARCHITECTS.
Brick, Terra Cotta & Tile Co., Makers.

architect, illustrated in THE BRICKBUILDER for April, was built in large part of Hydraulic-Press Brick.

F. B. Wheaton, who is the advisory architect for the United States War Department, was architect of the Drill Hall at Fort Des Moines, Iowa, illustrated in THE BRICKBUILDER for March of this year, and not J. Knox Taylor, as stated.

THE "WITCH DOCTOR," SCHOOL OF MEDICINE, UNIVERSITY OF PITTSBURG.
Atlantic Terra Cotta Company, Makers.
Palmer & Hornbostel, Architects.

The United States in 1908 turned out $108,062,207 worth of brick and tile manufactures. Every state and territory in the Union contributed to the totals, but Ohio led all others with products valued at $15,915,703 for the year.

The terra cotta for the Fire Station at Brookline, Freeman, Funk & Wilcox, architects, illustrated in this issue, was furnished by the Atlantic Terra Cotta Company.

NEW BOOKS.

MODERN LETTERING — Artistic and Practical — for architects, artists, decorators, etc. The construction of pen and ink designs for commercial uses, memorials, resolutions, etc. By William Heyny. Price $2. New York, William T. Comstock.

DETAIL BY FERRY & CLAS, ARCHITECTS.
Atlantic Terra Cotta Company, Makers.

THE ESSENTIALS OF LETTERING — A manual for students and designers — by Thomas E. French and Robert Meiklejohn. Columbus, Ohio, Varsity Supply Company.

BRICKLAYING SYSTEM, by Frank B. Gilbreth. The purposes of this book, as enumerated by the author, are as follows: (*a*) To put in writing that knowledge which has been handed down by word of mouth from journeyman to apprentice for generations. (*b*) To record methods of handling labor, materials and plant on brickwork that will reduce costs and at the same time enable the first-class workman to receive higher pay. (*c*) To enable an apprentice to work intelligently from his first day, and to become a proficient workman in the shortest possible time. New York, The Myron C. Clark Publishing Company.

TABLES FOR CALCULATING SIZES OF STEAM PIPES FOR LOW PRESSURE HEATING, by Isaac Chaimovitsch, M. E. Price $2. Chicago, Domestic Engineering.

THE SLIDE RULE — An elementary treatise by J. J. Clark. It has been the author's aim to produce a work that will enable anyone having a knowledge of the ordinary principles of arithmetic to use the Slide Rule readily and with precision, to understand thoroughly the principles governing its construction and operation and the reasons for all settings, and to familiarize the reader so thoroughly with the use of the instrument that he cannot forget how to use it and need not remember any of the settings. Scranton, Pa., Technical Supply Company.

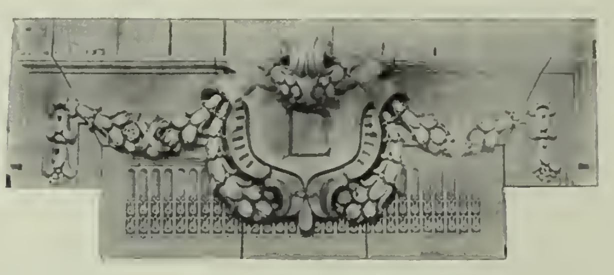
A HISTORY OF ARCHITECTURE, by Russell Sturgis, Vol. II., Romanesque and Oriental. The subject of Vol. II. differs from that of Vol. I. in that the buildings considered are generally in existence. The difficulty in the new inquiry is in the partial substitution for the original work of art, of a highly sophisticated modification of it, put into place by later workmen who were partly out of sympathy with the original designers.

DETAIL BY C. C. & A. L. THAYER, ARCHITECTS.
Conkling-Armstrong Terra Cotta Company, Makers.

DETAIL BY ROUSE & GOLDSTONE, ARCHITECTS.
South Amboy Terra Cotta Company, Makers.

FIREPLACE EXECUTED IN COLORED FAIENCE BY THE HARTFORD FAIENCE COMPANY.

LAWRENCE VEILLER in his book on Housing Reform, which has been published recently by Charities Publication Committee, 105 East 22d street, New York, says, "No housing evils are necessary. Prevention's the thing; the small cities the place; now the time.



DETAIL BY A. P. CLARK, JR., ARCHITECT.
Ketcham Terra Cotta Works, Makers.

The great opportunities to save the people from overcrowding lie in the smaller cities. Thirty years ago congestion was a live question in New York because it was manageable. While in some of the larger cities it now seems hopeless, it is not so in any city of 100,000."

"If I were to emphasize any particular line of affirmative action in housing reform it would be the prevention of the tenement disease before any city begins to suffer from it. New York has over 100,000 tenement houses; over 20,000 tenements in which most of the rooms are without light or ventilation; over 80,000 buildings a standing menace from fire; over 1,000,000 people without bathing facilities in their homes."

FRANKLIN BUILDING, SEATTLE, WASH.
Walls of white enamel brick with terra cotta trim. Brick furnished by the American Enameled Brick & Tile Co.

THE BRICKBVILDER

AN ARCHITECTVRAL MONTHLY

VOL. 19

JUNE 1910

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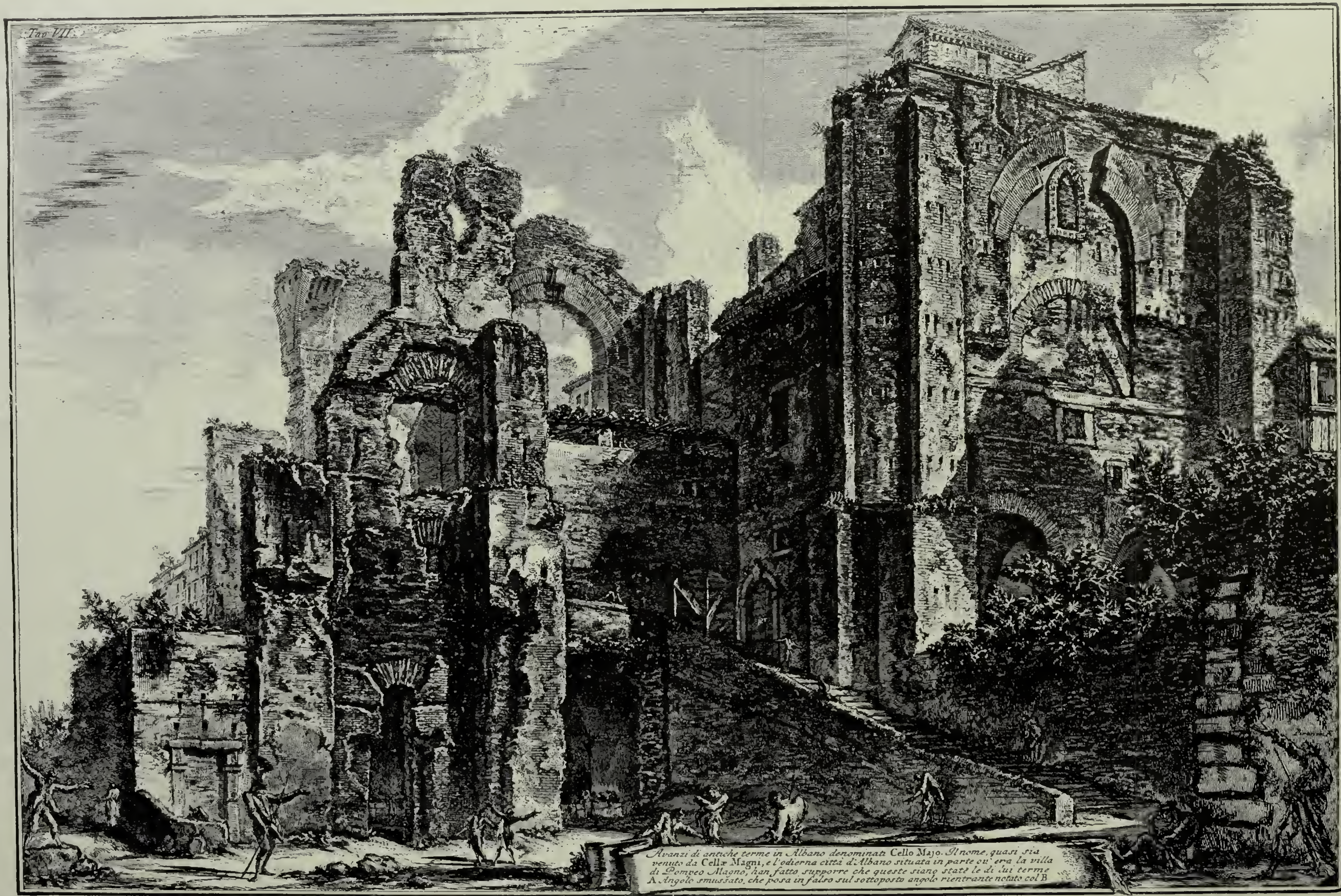
LETTERPRESS



RUINS OF THE EMPEROR DOMITIAN'S VILLA IN THE ALBAN HILLS NEAR ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

From the Alban Hills, about fifteen miles south of Rome, there is a splendid view over the Roman Campagna. Various detached ruins in modern villas and gardens here have been identified as forming parts of the villa of the Roman Emperor Domitian, which extended for a distance of six miles over and between the sites occupied by the modern towns of Ariccia, Albano and Castel Gaudolfo. The ruins here engraved by Piranesi he designates as the baths of the villa of Pompey. It is probable however that they belong to the time of the Emperor Domitian (81-96 A.D.) who enlarged the villa of Pompey, so that it contained a military camp, enormous reservoirs of water, baths, a theater, an amphitheater and a circular temple.

THE BRICKBUILDER

VOL. XIX. NO. 6. JUNE, 1910.

Co-Partnership Agreements Between Architects.

BY JUDGE CHARLES N. GOODNOW.

IN DEALING with this important question, it will only be possible to outline in the briefest manner the principal features of partnership law. This branch of our jurisprudence is as complex and full of trouble for the careless and uninstructed individual as any other branch, and often leads to grave situations and losses to those who in most other matters are regarded as excellent business men.

We often hear it said, "Yourself for a lawyer, a fool for a client," and this is especially true of men who have to look after the interest of others, and no matter how proficient they may be in guarding their clients' interests, when it comes to their own they are usually neglectful, careless and unbusinesslike. This seems to be especially true of architects. In most other business enterprises when a combination of men is formed into a co-partnership, articles of agreement are usually a first consideration, and they, as a rule, are more or less elaborate as the nature of the business demands. The interest of each partner is safeguarded as to his present and future income, his financial interests are fixed, his rights and duties are defined so that the business is protected and the combination is put on a working basis and becomes a business machine, with each partner a cog performing his allotted part so that the combination as a whole works without friction.

It is not necessary that great detail or minuteness be gone into, but sufficient should be put in writing that the interests of all should be clearly defined and not left for the courts to determine at the end of an expensive lawsuit. After an inquiry of some thirty architectural firms in the State of Illinois, I find that less than a dozen have written agreements which could in any way be regarded as a partnership contract, and only nine of the remainder will admit that their agreement is verbal, and several, while appearing as a firm, are in fact acting as individuals and only share office rent. Many of them have the crudest form of contract. One firm of high standing and ability, having been together many years, conducting a large business, has its agreement on the fly-leaf of a book, signed by both members, which only says: "The proceeds shall be equally divided."

Another firm, and one of the largest and best in Chicago, informs me, with apparent honest belief in their statement, upon reply to my inquiry, as follows: "We beg to advise that there is no law or rule or even legislation governing partnership contracts of architects that we know of." And yet this firm is noted for its ability to protect its clients from all the snares and pitfalls surrounding the building laws and complications that may arise from building contracts.

A verbal contract is as good as a written one when the parties are all agreed as to its terms; but when a dispute arises it is often hard to produce the evidence to prove either side of it. When written it proves itself, and unless ambiguous on its face, requires no parol testimony to construe it.

Partnerships are formed for business purposes — they may be dissolved for many reasons: death, insanity, dishonesty, sickness, refusal to act, old age, incompetency, better business opportunity, expiration of agreement, and many other reasons. When this occasion arises, the articles of agreement should furnish the means of accomplishing the desired results without trouble, friction or loss to anyone.

So far as the architectural profession is concerned they are not specially interested in all the general principles of partnership law, nor in the fine distinctions that have been drawn. Yet they are interested enough in the question to have some outline of the main features that might in some manner affect any partnership contract now existing, or which may hereafter be made, and while I shall deal at some length upon partnership law, I shall try to limit myself to that law which may interest the profession generally and be of value to the individual, and which, if followed, will protect him from serious inconvenience and loss, and enable him to forestall trouble for himself and his family in case of death of either himself or one of his partners.

NATURE OF PARTNERSHIPS. A partnership is a business relation existing between two or more persons, legally capable of contracting, arising out of a contract by which they agree to unite their property, credit, services, skill or influence in some business, so that they have a community of interest in such business, and usually divide the profits and losses between themselves in a fixed proportion.

The contract of partnership may be *express*, and as such, either written or oral. An oral contract in many of the states is by statute, made unenforceable with reference to its duration where the contract of partnership is to last for more than one year from the date of the

NOTE. — Judge Goodnow was formerly Attorney for the Board of Examiners of Architects of the State of Illinois.

making. It comes within what is called the Statute of Frauds. The contract of partnership may be *implied* from the conduct of the parties. It may include a single transaction as well as an extended series of transactions. As between the parties, the question of partnership is one of intention, being in the first instance a question of fact; but when the facts are conceded or established, a question of law.

If the parties enter into a relationship which the law holds to be a partnership they are partners, although they may not have known the legal effect of their acts, or though they may have called the contract one of employment.

PARTNERSHIP NAME. A partnership may, in the absence of some statutory provision, transact business under an arbitrary or a fictitious name, so long as the name will not deceive the general public as to the identity of the individual members or hold out the partnership as a corporation.

TEST OF PARTNERSHIP. The real test of the existence of a partnership is a community of interests in the partnership business. Sharing of profits and losses is so usual an attribute of a partnership that it is implied from the relationship and there need not be an express agreement to share losses. An agreement to share losses is implied from a contract to share net profits. However, as the question is one of intention of the parties, it is not safe to make even this an arbitrary test. If, however, there is no community of interest or common control in the business transaction, mere sharing of profits and losses by special contract does not constitute a partnership.

LIMITED PARTNERSHIP. In all states of the Union, partners as between themselves may form a special or limited partnership, fixing the ratio of profits or losses and limiting their liability as to partnership debts as between themselves, but as to the general public, except in those states where laws exist regulating limited partnerships, all partners are held liable for the partnership debts, and in those states a strict compliance of the law in all respects must be had in order to avail of the limitation of liability allowed.

POWER OF ACTION. The general scope of a partnership is generally a question of the intention of the partners as expressed in their partnership contract. So far as the law is concerned there is no restriction on the exercise of such powers as it chooses at any time to exercise, except such limitations as are expressed in the contract or such prohibitions by statute, or on illegal, immoral or fraudulent conduct as apply equally to individuals.

LIABILITY OF PARTNERS WITHIN SCOPE OF BUSINESS. Partners' liability to third persons on partnership contracts arises from the actual existence of the partnership, by express acquiescence, by ratification and by estoppel. If a partnership exists as a matter of fact, the partners are liable on contracts made within the scope of the partnership business by any one of the partners, if the other contracting party knows of no limitations on his authority to contract, even though the other contracting party did not know who such partners were when he entered into such contract. If the contract is within the actual scope of the partnership business the members are liable thereon without any reference to principles of estoppel.

NON-TRADING PARTNERSHIP. Partnerships are again divided into non-trading and trading partnerships, and as architects are in the non-trading class we will only deal with that class. A partner in a non-trading firm has very limited powers to bind the partnership. He may contract for supplies or articles necessary to conduct the business, but he cannot otherwise contract debts. In partnerships not commercial in their nature one partner cannot bind the others by executing a promissory note unless authority is expressly given or recognized by all the partners or implied from general business habits. The courts of the various states have from time to time passed upon these questions so that the general principle is well fixed and determined. They have held that the following classes of persons have no authority to bind their partners on notes or contracts, etc., without their express authority: Attorneys, mining partnerships, physicians, publishers, planters, contracting and building, digging tunnels, farming, real estate, paving and curbing streets, keeping a tavern; we thus see that architects are in a similar class to the above.

ESTOPPEL. Although no partnership in fact exists, or although its powers have been exceeded, third persons who have been misled as to the existence or powers of the partnership, and have acted in reliance on such belief, may enforce partnership liability against those persons who have so misled them and held themselves out as members of the partnership in question, or have held out the person with whom such third person dealt as a member thereof, and a partnership may be liable for the transactions of one whom they allow to act as a partner, if the transaction is within the apparent scope of the partnership authority.

The reason for this general rule is that third persons are not bound to know of the existence, scope or power of a partnership, and under principles of estoppel may rely upon representations made to them, believed by them and acted on by them, so as to preclude those making such representations from afterwards denying them. However, estoppel can exist only where there is some wrongful act or omission of the person against whom estoppel is sought to be enforced.

In order to estop one from denying his liability as a partner, the person in whose favor the estoppel is alleged must have acted in reliance upon the facts which are claimed to create the estoppel.

DISSOLUTION OF PARTNERSHIP. A partnership when once formed may be dissolved by the agreement of the partners, or by the act of either, even if before the time for which the contract was to last, although his right to exercise that power without just cause may leave him liable in damages for such dissolution. If a partnership is formed to last for a fixed time, but the right to dissolve the partnership by giving written notice is reserved, it may be dissolved at any time by such written notice.

Dissolution by operation of law may be caused by efflux of the time fixed by the agreement, or by death of a partner. There is, however, a qualified existence or continuation of the partnership for the purpose of settlement. By contract it may be agreed that death will not cause a dissolution. In legal effect a provision of that kind upon death creates a new partnership between the survivors and legal representatives of the deceased by reason of the original contract.

A conveyance of all the firm's property, sale of the entire business, ceasing to do business, and the recession by one partner because the other wrongfully refuses to pay his share of the capital, or to perform his work in the business, causes a dissolution by operation of law. Also a sale of one partner's interest is held in effect a dissolution. Also the taking in a new partner is a new contract and abrogates the old.

A decree of court may also effect a dissolution. Such a decree may be based on fraud, or exclusion from inspection of books, or insanity, or on the insolvency of a partner. Insanity or insolvency, however, are not of themselves a dissolution, but are merely the grounds for a decree of dissolution by the courts.

Partnership at Will. A partnership formed for no specified time is a partnership at will, and may be dissolved at any time by any of the parties. Each partner may withdraw when he pleases, without liability to his associates for damages, if he acts without any fraudulent purpose. The fact that the contract specifies no time is not always conclusive that it is at will, for if the intention appears to continue the partnership until certain objects are accomplished, it will not be a partnership at will but one to continue until its purpose is completed, or the impracticability thereof is demonstrated. Thus a partnership formed to erect a building is not at will but for the completion of the enterprise.

Notice to Dissolve. A usual and proper method of exercising the right to dissolve is by notice to that effect to the other partner, and there is no dissolution until notice is communicated. If the articles of partnership provide the method, then that must be followed. If not, other notice must be given; this does not always mean that actual notice must be given, as the law, in some instances, implies notice from circumstances.

Perhaps a clearer understanding as to the causes for dissolution will be had if I should divide them into two classes.

No. 1: Events which per se amount to a dissolution. (*a*) Dissolution by operation of law, as death, lunacy, war, bankruptcy or declared insolvency, sale on execution of the share or interest of a partner; (*b*) dissolution as a necessary consequence of the act of one or all of the partners, as a sale of the entire interest of one partner, abandonment by all.

No. 2: Events or acts which are grounds of dissolution are: (*a*) those for which an injured or innocent partner may elect to consider the firm dissolved, as for example, the absconding of a partner or abandonment by him; (*b*) those for which a dissolution may be decreed by a court of equity on the application of a partner, as fraud and misconduct; impracticability of continuing from impossibility of succeeding, and from impossibility of getting along together peaceably.

Continuation of Partnership After Death. Partners can agree that the death of any of their number shall not terminate the partnership or require a winding up, which is always necessary when one partner dies. This is frequently done when the name of one or more of the partners is desired in the business for the business it may bring, or to provide an income or business for his heirs after death. But such agreement must be expressed in clear and unambiguous terms.

Notice of Dissolution to Third Persons. Upon a dissolution by operation of law or decree of court, no notice to third persons is necessary. It being of a public and not of a private nature, the law presumes that all persons take notice; but as to all other methods of dissolution, notice is necessary, and as to this there are two kinds of notices required whether there be a complete dissolution of the concern, or the retirement of a single partner, or the addition of a new member, it does not affect the outside world unless notice is given. Actual notice must be given to all former customers of the firm and notice by publication to the other persons.

One class of persons has become acquainted with the firm and by presumption of law with its membership, by reason of business transactions, and these are entitled to the same certainty of notice of dissolution as they had of its existence, which is actual knowledge. The rest of the world, that part which has not given credit to the firm or transacted business with it, has become acquainted with it from the fact of its existence, from reputation, hearsay or their own observation, and this is to be counteracted by a publicity of the same sort, and at least measurably, as widely spread, viz., proper publication, generally by advertisement in the proper newspaper.

Who May Become Partners. There is one other general proposition to be understood in all partnership contracts, and that is, who are proper parties to make a partnership contract. Two or more individuals may contract as partners when none of them are infants or insane; two or more corporations cannot make a partnership agreement; nor can a corporation and an individual become parties to any kind of enterprise. It has universally been held to be against public policy and such contracts are held to be void, and neither side can recover from the other; the law leaves them where it finds them without remedy and grants no relief.

Having treated this question but briefly from the organization to the dissolution of a partnership, there are several other necessary elements that require understanding.

While it is true that the architectural profession is in the non-trading class, and the necessity for contracting partnership debts is limited owing to the fact that brains and ability are the largest asset and no stock in trade is required to conduct the business except an office, drafting room, library, necessary help and supplies, and as the business grows older the accumulated plans and specifications, still these items often run into large amounts and to this extent each partner is individually liable and interested, and I desire to outline the legal status of the partners; First: Upon a dissolution by death or mutual consent or by any act whereby the partnership ceases to exist; or, Second: The withdrawal of one or entry of a new partner and the continuation of the association of some of the members.

The death of a partner per se dissolves the firm at once for all purposes, unless provided against by contract, and is as effective as though dissolved by mutual consent, lapse of time, or by any other reason that brings the contract to a close.

Upon dissolution in any manner than by death or bankruptcy, the authority of each partner at once changes, and while heretofore they acted as agents of one another, the general scope of that agency is now limited. Except as to persons not properly notified of dissolution, the only power remaining is that which is necessary to wind up the partnership, to collect moneys due, and to pay off debts and to divide. If dissolution is caused by death the whole title devolves upon the surviving partner, and for this reason he stands upon a different ground. But assuming a dissolution by mutual consent or by efflux of time, or in any other way, the power to carry on the business is wholly gone and has become a mere right to wind up, with one exception only of unfulfilled transactions and contracts which they are under obligation to carry out. As partners cannot release themselves from an incompleted contract by dissolving, or have no right to dissolve as to such contract, and as death does not discharge the obligation, each partner has the power after dissolution to carry out such contract, and the other parties are bound by his acts and his fidelity in so doing.

If the firm has entered into an executory contract which is only partially fulfilled at the death of one partner, his death does not absolve either party from performance, and the existence of the partnership with its active functions continues in the surviving partner for the purpose and with the duty of fully performing the contract. The surviving partner has the exclusive right of possession, management and control of the entire property for the purpose of winding up, although generally he is not entitled to compensation for his services. If there are two survivors, this right and duty devolves equally on both.

As the possession of the surviving partner is only for the purpose of winding up, he has as little right as any other partner after dissolution to make new contracts or change the form of old ones. Nor can he incur any liability except for expenses proper to the legitimate winding up of the business as distinguished from continuing it. There is only one other exception to this rule, and that is when contracts have to be completed, when it is the duty as well as the right of the surviving partner to complete unfinished contracts from which death does not absolve the firm, and for this purpose he may even borrow money or incur other legitimate debts. If the surviving partner is guilty of misconduct or bad faith in winding up the business, or if he is misapplying the funds, or in any way diverting the assets, he can be controlled by application to a court of equity and an injunction obtained either with or without a receiver.

Upon the dissolution of a firm by the withdrawal of one member or the coming in of a new member when the business is continued, the most essential thing to be done is to give full and ample notice in order to limit the liability. To the outgoing member it is necessary in order that he be not charged by subsequent incurred debts, and to the incoming member that he may not be involved as to previous debts, and to the remaining members that the public be notified that all subsequent payments may be made to the proper parties.

My general observation of architects' partnership agreements calls for a severe criticism, largely from their lack of many of the ordinary precautions necessary to protect the individual interests of their members. As long as the members agree and no contest arises, and as long as the members live, there is little occasion for much detail. It is only when discontent and discord arise, or when death works a dissolution, or one or more members desire to withdraw or dissolve the agreement, that the necessity arises to have the method clearly outlined and the interests of each well defined. If prudence and good business policy have not arranged this in advance by a proper agreement, the result may mean a lawsuit to dissolve the partnership, a bill for an accounting, and all the annoyances and expense incident to litigation.

It would be a difficult matter to outline here a form of partnership agreement that would meet the conditions in every case, but enough may be given as applying to every contract of partnership, to which may be added any special features desired. There are, I find, several special features in many of the contracts brought to my attention which, with many of my own suggestions, I wish to outline briefly:

Time Partnership Begins. The date of the beginning of a partnership is a matter of importance because the agency of each to act for all and the right to share profits begins then.

Duration. It is also important to fix the duration of the partnership for the reason that unless fixed it is a partnership at will and can be dissolved at the pleasure of any partner without liability to his co-partners, however ruinous the consequences to them.

Continuation of Agreement After Death. As death or bankruptcy of one partner will terminate the partnership, if it is intended to continue the business in any way for the benefit of the estate after death of one of the members, this fact should be clearly expressed. At times the immediate dissolution and winding up of the firm's business may be disastrous both to the surviving partners and to the estate.

Business. The objects for which the partnership is formed should be clearly defined because its nature and requirements are the measure of the power of each partner to bind the firm. It is usual to insert a clause requiring all the partners to devote their entire time and attention to the business, and the observation of good faith to each other and fidelity to the common interest, and not to engage in any other business so long as the partnership exists.

Finance. If the architect is conducting his own business there is only one arrangement he may require, and that is when he gives to some employee a working interest. This is to be regarded as a partnership only in the most limited sense. It usually calls upon him to finance the business and stand responsible for all expenses, while he either guarantees a fixed amount per week and a percentage on the net earnings, or a fixed amount per week and a percentage on all work brought in by the employee. This arrangement often gives a living wage to a good man and at the same time offers him an inducement to hustle for work. This arrangement is frequently made by some of the larger firms with their leading draftsman or superintendent, and often proves beneficial to both. These men, however, do not have their names in the firm. It is quite often in large offices that they work the financial end on the co-operative plan, each man having a fixed or drawing account, and at the end of the year from the net profits each man receives a percentage according to his salary. This, of course, makes a booster for the business out of every employee, for his own profits depend on the amount of business brought into the firm.

If the firm is composed of two or more, expenses and profits are usually shared equally. If one or more of them are older men in the practice and have a larger interest, after the expenses are paid the profits are divided in such proportions as may be agreed upon, each one usually drawing a fixed amount for family expenses, and the younger members of the firm, or the less experienced ones, receiving from the net prófits a certain percentage, or a percentage on the work brought to the firm by them.

In all well regulated firms, all moneys received are deposited in bank and checked out as required, all checks signed by one member and countersigned by another, thus avoiding the overdrawing of an account by any one member, which is often a source of much trouble. However, in the case of overdrafts, if any, it ought to be provided that interest should be charged upon sums in excess of the regular stipulated amounts; unless this is expressly done, overdrafts will not usually draw interest.

Duties. When a partnership is formed between men skilled in different lines, that part of the work is usually a part of their agreed duties, and quite frequently we find that one is assigned to the handling of the office force, drawing of the specifications, receiving the bidders and making all agreement with contractors. Another looks after the outside work and payment of the bills and settlement with contractors. Another may attend to the making of sketches or planning the structural iron work and the necessary testing of the accuracy of the work — in fact each one being assigned to the work according to his particular ability. If, on the other hand, each is well skilled, the work is usually apportioned as it is received.

Assets. The ownership and disposition of the assets are at times an important feature, and outside of the library or books which accumulate from time to time, and the fixtures which have only a small money value, the drawings and specifications of an architect's office often become very valuable. When architects before becoming partners have on hand a large number of valuable plans, etc., it is often provided that these plans, etc., shall continue to be the personal property of the individual, but the partnership shall have their use and to all subsequent plans drawn during the partnership. This is often satisfactorily arranged by making, in the first instance, copies for each partner, which then become the property of the individual members, thus giving each in case of dissolution complete working plans and specifications of all the buildings in which the firm was interested.

At this point allow me to discuss the one subject which for years I have been insisting upon, and which if followed by all architects would increase the business and make their plans more valuable; and that is, in your contract with the owner, reserve the ownership of all plans and specifications — only lease them or give him the right to erect one building from them — and when your work is done call in all plans and specifications, and if he wishes their use to erect another building from them, be in a position to re-lease or re-sell the right to erect another building. Do not for one commission sell the perpetual right to your skill and ability.

Bookkeeping. A complete set of books should be kept in which all receipts and disbursements should be accurately entered. With many firms monthly balance sheets are issued and all net profits shown thereon are subject to be declared as monthly dividends. With some firms these dividends are only declared semi-annually; with others only annually. In either event the monthly balance sheet is available to tell the exact financial standing of the firm.

Disbursements. In some contracts we find no limitation placed upon the spending power of the individual members for partnership purposes, while in others no member can spend on behalf of the firm more than a certain fixed amount (say $5) without the consent of the other members. This has its merits, for a free spender could greatly reduce the net profits by foolish purchases, and it is a good system of economy to plan a safety valve near at hand to check a disposition to extravagance.

Signing of Bonds and Notes. So much trouble has arisen out of the habit of signing bonds and accommodation paper for others that the best partnership contracts usually contain a provision that no member of the firm shall sign any bond, indorse any paper or become security on a note or bill, or guarantee the performance of any contract, except for some other member of the firm, or upon the consent of all the other members of the firm, and in some cases there are no exceptions even in favor of the members of the firm.

Study. One of the most unique, and to my mind liberal, agreements drawn with a view to the ultimate benefits to the business exists between the members of a leading firm who have a large and lucrative practice. This agreement, among other things, provides the following:

"In case it should be the wish of either partner to take a prolonged tour to Europe or elsewhere for the purpose of professional study, he shall be at liberty to take such a tour or tours for a period of time in the aggregate not exceeding one year without loss of salary or interest in the profits of the business; said tours, however, to be at the personal expense of the partner taking the same, and not to be taken at the same time by both partners.

"And it is also mutually agreed that for the purposes of advice and consultation during such prolonged absence of either partner, the absent partner may designate some person as his attorney and representative, such representative to be kept informed as to the progress of said business and to be allowed access thereto at all reasonable times."

This arrangement was made with a view that in the end the business would receive the benefit of such study and research.

Obtaining Business. The same firm above referred to has another clause in its agreement that shows foresight and business acumen, as follows:

"It is also mutually agreed that the annual dues of said 'A' in the ______ Club (one of the largest and most influential clubs in the city) shall be considered as a business expense and shall be paid by the firm, and when the said 'B' shall deem it for the interest of the firm that he join said club, or any similar city club, then the annual dues of said 'B' (but not the initiation fees) in said club shall be paid as a firm expense.

"It is also mutually agreed that the annual dues of either partner in any architectural society, such as the American Institute of Architects, the Chicago Chapter of the same, the Chicago Architects Business Association, etc., shall be paid by the firm as a business expense, and the expenses of either partners in attending the conventions of the American Institute of Architects, whether said partner be a member of said Institute or not, shall be paid by the firm."

The intention of the foregoing provisions is that in all cases in which membership in a society or club is largely for the interest of the business, then the expenses or annual dues, but in no case the initiation fees, shall be borne by the firm. This same idea is often applied to expenses incurred in entertaining clients or prospective builders, provided the sum expended does not exceed a stipulated amount and a statement is presented within twenty-four to forty-eight hours after the expenditure.

Disagreements. An agreement to submit disputes to arbitration is a common provision where two or four partners are in a firm when a tie may exist—otherwise the majority rules.

Notice to Partners of Dissolution. The time limit and method of dissolving a partnership agreement varies, often ranging from thirty days to one year, upon notice in writing being served upon the other members.

Division of Assets on Dissolution. The methods of division of profits and assets and payment of debts are a matter of agreement. One firm provides that all original plans and specifications owned by the firm shall become the property of the remaining member or members of the firm, the outgoing member having the right at his own expense to have all plans and specifications copied for his use. The other assets may be valued and the remaining members pay to the outgoing member his proportionate share of that value, and in case of dispute submit to arbitration. All accrued profits to be paid upon the regular dividend period and the value of all uncompleted contracts to be determined as of the date of dissolution and the outgoing member to be paid his share on the date of the next succeeding dividend period, or when said contracts are completed and paid for. All these payments to be made, however, after all debts of the partnership have been fully paid and settled.

Dissolution by Death. A prominent firm in New York City has a contract which provides that the death of one of the partners works a sale to the surviving partners, and the provisions therein are interesting enough to give them in full:

"Each partner agrees and covenants to and with the other partner that in case of the death of either partner, the surviving partner shall be entitled to, and shall and will, continue the business, use the firm name therefor, and own and possess for himself the good-will of such business, and also all the other property of the firm, and each one for himself hereby agrees, and does hereby bind himself, as consideration for the deceased partner's equal one-half share therein, to fulfil the terms, covenants and agreements, and make the payments, next hereinafter provided, as follows:

"1. The books of the concern shall be balanced on the next semi-annual settling day following the decease of the partner, and in such balance shall be included commissions earned on unfinished work in progress at or prior to the death of the partner, estimated according to the stages fixed by the schedule of rates of the firm, though not payable at the day of the death; and the legal representative of the deceased partner shall be thereupon entitled to draw such proportion of a partner's share under these articles of the net profits appearing by said balance as the fraction of six months fixed by his death shall bear to the whole six months, as the same shall be collected.

"2. Such surviving and continuing partner shall pay to the legal representatives of the deceased partner the sum of . . . dollars thereof within thirty days after the appointment and qualification of such legal representatives, and . . . dollars at the end of six months from the death of the partner.

"3. He shall also pay to the legal representative of the deceased partner, twenty (20) per cent of all gross commissions to be earned and chargeable and collected on work commenced or undertaken, or in progress at or before the date of the death of the partner, as such commissions shall be earned and collected, and to this end the said legal representatives shall be entitled to receive from him, within thirty days after their appointment, a statement or list of all such work commenced or undertaken, or in progress, and such twenty per cent of commissions shall be paid to said legal representatives quarterly as the same shall be collected."

A prominent Chicago firm has a somewhat different arrangement, as follows:

"In case of the death of one of said co-partners, the surviving partners shall pay to the representative of the deceased partner the share of said deceased partner in the profits of said co-partnership, when such profits are collected, arising from work done prior to such death.

"In addition thereto said surviving partners shall within sixty days after such death pay to the representative of the deceased partner a sum equal to one-sixth of the net profits of said co-partnership for the year immediately preceding such death, and said surviving partners shall receive in return a transfer of all the interest of said deceased partner in the furniture, fixtures, plans and specifications and other goods and chattels belonging to said co-partnership, and the good-will of the business of said co-partnership.

"There shall be included in such transfer the interest of the deceased partner in the plans and specifications referred to in the third article of this agreement."

Employment and Discharge. In some of the large firms where many men are employed, we find it provided in their contract that no clerk, draftsman, superintendent, apprentice or other employee shall be discharged, taken or engaged in or about the business, or at the expense of the firm, by either of the partners without the consent of a majority of the co-partners. In some others, we find that the power to employ and discharge employees is delegated to one partner.

Profits. It is frequently provided that all premiums and apprentice fees paid or to be paid by any person received into the business shall be considered as part of the profits. Also that all prizes on contests go to the firm as profits. Also that when one of the partners accept an official position that all the partners shall assist in the work to be performed under that position, and that the salary and the profits shall be part of the profits of the partnership.

Discharge of Debts. Another very essential agreement is that neither of the partners shall, without the consent of (a majority) (the other partner), compromise or release or discharge any debt or debts due or owing to the firm without receiving the full amount thereof, or do any act whereby any debt or security shall be in any wise diminished or discharged.

There are many different forms of partnership contracts, each varying as the interest of the parties demands, but sufficient has already been outlined to make a complete working agreement for the general run of architectural firms if followed, not to the letter but in its general provisions.

Sutton Place, England.

BY ARTHUR G. BEIN.

Photographs by Thomas W. Sears.

SUTTON PLACE, one of the finest old brick and terra cotta manor houses of England, stands to-day in excellent and perfectly habitable condition. It was built about 1520, by Henry VIII.'s privy councilor, Sir Richard Weston, and has remained in the same family ever since. As the Westons were stanch Roman Catholics their fortunes declined in a court where Protestantism was always increasing; they therefore had no money to spend on keeping their ancient home in repair.

Its splendid preservation is due to the elemental durability of the brick and terra cotta with which it is built.

For more than the use of these materials, then novel in England, is the old place conspicuous. Unlike the many stone dwellings that preceded it, it shows not a trace of the feudal. Nothing was planned for defense — Sir Richard Weston seemed to foresee the long, long peace that was to settle on England, and to dare build himself a home that is surprisingly modern — where the visitor would no longer be repelled by frowning gateways, grim portcullis, and heavy stone walls pierced with hostile slits.

Having decided to inaugurate in England a new style of house made of a new style of material, Sir Richard naturally took advantage of the talents of the skilful Italian craftsmen whom his royal master, a lavish patron of architecture, had invited to England. Moreover, Weston himself, soldier and ambassador as well as statesman, had been to France and had seen the building of the beautiful châteaux along the Loire. His own house, therefore, is full of Renaissance feeling; Italian lightness and fantastic grace embellishing a dwelling that is still Tudor in its mass.

But to ascribe all its symmetry, its resolute striving for design, to the outburst of the new art of the South, would be to overlook the fact that the very nature of the materials used determined to a great extent its form. The disposition of motifs, the simplicity and harmony of fenestration, must have inevitably occurred in a building where the ornament and structural features were moulded and burnt in batches instead of being freely cut in individual units to suit the fancy of individual workers. Hence are the marked differences between the pleasing innovation of regularity and repetition at Sutton, and the diversity of scale in the stone mansions of its day.

Within forty years after the erection of this famous house, terra cotta had ceased to be used. That in this short time its use was so perfected is amazing. The burning of the blocks is so regular and the alignment of the joints and mouldings so true that from a short distance one could suppose, were it not for the rich color, the work was executed in stone. The vertical height of the blocks between joints is most uniform, although varying in different features; that is to say, in the moulded casings of the large windows the courses are 12½ inches, while in the plain surface blocks of the much attenuated turrets flanking either side of the main entrance they are only 10¼ inches. These terra cotta courses are considerably smaller, and as has been said, far more regular than the stone courses generally seen in contemporaneous stone work. Furthermore, the grandly monotonous bands of decorative diaper pattern crowning the building would have been possible only in terra cotta, for, courageous though the early builders were, it would have been an enormous undertaking in stone; at any rate, for a private mansion.

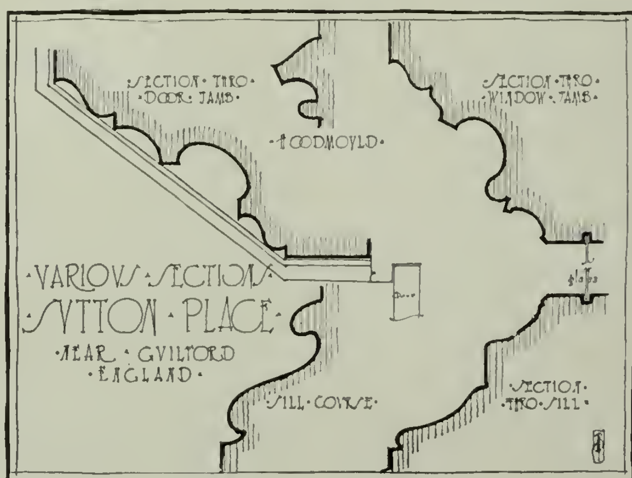
On first seeing the building one fails to appreciate these niceties of scale and arrangement of bands and ornament. The American thinks himself so familiar with terra cotta that he is apt to pass it over at a glance in England. He has, naturally enough, always looked

upon it as a substitute for the more expensive stone; he frequently misses the fact that there, four hundred years ago, it was deliberately chosen in preference to the cheaper method of stone construction. The builders of Sutton saw its possibilities for expressing the new art that had come to England. For this reason the place is worth a close examination by the American architect, as it will give him many a hint on designing in a way that will interpret the resources and durability of a material he will have some day to use. It is frankly not a substitute for stone, but an ideal solution of how to express terra cotta.

Sutton lies on the banks of the Wey, four miles from Guildford, Surrey. Approaching it from the main highway it rises from a flat severe expanse of lawn, an aspect the opposite from the charming and appealing garden side, where the façades with numerous gables big and little, and a skyline broken by huge stacks of chimneys, all contrive to make a silhouette most picturesque above a high garden wall.

In general the plan was like all other plans of the early part of the sixteenth century, only more symmetrical, being built around a quadrangle fronted by a lofty tower with an arched gateway flanked by hexagonal turrets. Opposite this entrance the great hall connected the two wings, with the principal apartments at its upper end, the kitchen, buttery and cellars at its lower — the invariable arrangement that prevailed a century before. The original entrance to the quadrangle, with its tower and turrets, has been completely removed, leaving the building an inverted U in shape. It is these ungabled ends of the U, seen on approaching, that form the least interesting view of Sutton.

The brickwork predominates throughout, rich in color, texture, and the patterned surface supposed to have been introduced by Holbein from the continent. In color, it is a sort of beautiful salmon red fading to buff, with darker accents, recalling Compton Wynyates, most famous of English brick and stone mansions. In texture it resembles our burnt bricks of to-day. They are warped and discolored, irregular in shape and surface. The size averages about 2 inches by $8\frac{3}{4}$ inches, the dark headers 2 inches by $4\frac{1}{8}$ inches. The joints are rather large, measuring between $\frac{1}{2}$ inch and $\frac{3}{4}$ inch, and the mortar a coarse composition of sand and lime. This mortar is brittle to the touch and can be easily picked out with a pocketknife, yet it has weathered well for centuries and continues to do so — one of the inexplicable features of foreign masonry. The brickwork is laid up with alternate courses of headers and stretchers, except where such arrangement is interfered with by the headers of the diamond patterning.



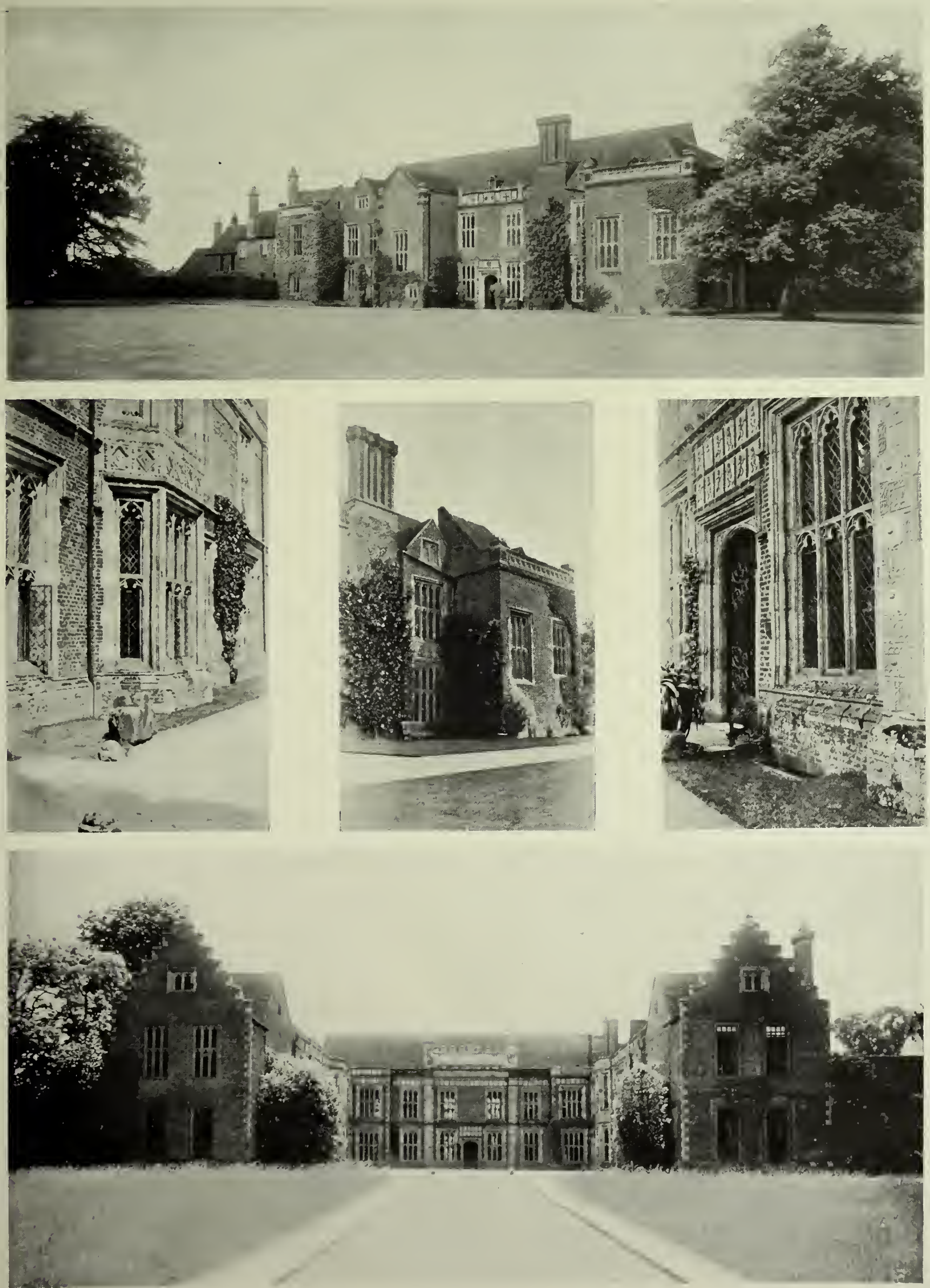
This diaper is formed with dark headers, eleven courses high, giving a distance of 28 inches from point to point. They are not dark enough, however, to divide the surface into a stiff geometrical series, like so much of our modern brickwork, but are of a subdued bluish tone so light in some places that it fades into the general sparkle of the whole mass. Mosses and lichens add their color to the picture, but it is above all this sparkle caught by the rough texture in the sunlight that is one of Sutton's greatest charms.

The fine old chimneys cannot be appreciated from the front, as they were not placed in the quadrangle walls; but the garden reveals them in all their splendor. Immediately to the right of the garden entrance rises a triple flue stack, each flue encased in an octagonal shaft and separated from its neighbor by an air space, though the caps and bases are connected. It is a masterpiece of the brickbuilders' art, for its various intersections and intricate cutting tell of difficult work known only to those who have tried to reproduce them.

Although the brickwork ranks amongst the first in England, it is after all the terra cotta that most attracts one's attention. If the terra cotta is a departure in the way of material, it is a complete revolution in the way of ornament. There are no large undecorated surfaces, but the entire area of the unmoulded blocks is covered with a flat delicate relief of curious ornament.

So inconspicuous is this relief that from a distance it takes on the appearance of nothing more than a rough texture. A block showing an R. W. alternates with one showing a tun, or wine cask, an attempt at a pun on the family name. This tun occurs in many places on the building, for instance all along the horizontal string courses, but instead of being surrounded by wine leaves and other long-used devices, we find it in the midst of an entirely new type of ornament. This proves that the terra cotta was made expressly for Sutton Place and not purchased from any ready-made stock, English or continental.

The whole of the ornament is a curious intermingling of old and new styles. Some panels show the Tudor Gothic quartrefoil. For this four separate castings were made; a single quarter of them placed continuously, creating a form of machicolations that is used in another band.

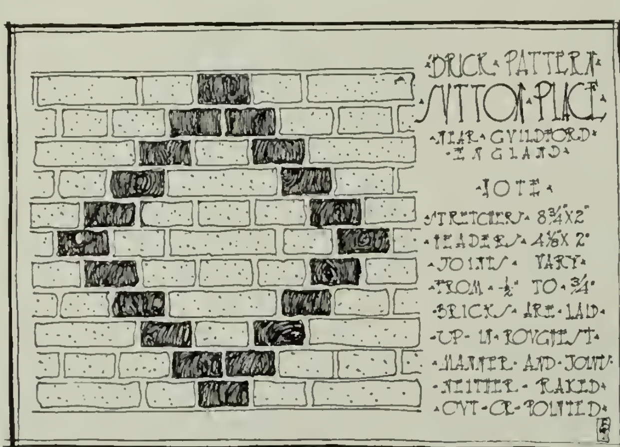


SUTTON PLACE, NEAR GUILFORD, ENGLAND.

Decidedly the most striking part of the ornament is the amorini that disport themselves over the doorways and in the great panel between the turrets. These amorini born in England are heavier and clumsier than those seen in Italy. In the absence of any documentary evidence this would lead one to believe that these are the work of Englishmen inspired or perhaps superintended by the Italians then known to have been in England. The same imperfect expression of the artist's idea characterizes the ornament throughout and gives a quaint and primitive charm.

Where the material is moulded, the section throughout is pure Gothic, as in the window casings and various band courses. But in the big cavettos of these an interesting leaf ornament has been worked — naturally an unheard-of feature in stone. This same flowing ornament is found in the vertical mullions of the windows and in the trefoil heads crowning them. Where the terra cotta and brickwork come together, no attempt is made to line up the joints — they are left haphazard. How the two are bonded together is a matter of conjecture, but in no case can there be seen an intersection, crack, or separation of the materials.

Naturally the question arises, how are these much attenuated terra cotta mullions of the bay windows kept in position without iron, but it must be remembered that this old terra cotta is composed solid and not hollow. The lightness aimed at in modern work was not thought of four hundred years ago. Alterations alone reveal the mysteries of construction in those old places and here, when one of the bays overlooking the central court was being repaired, it was discovered that in back of the corner mullions vertical *2* inch iron pipes joined together to form a sort of framework to which the mullions were fastened, thus strengthening the bay. These were not put in at the time of erection, for reinforced terra cotta was then unknown, but they antedated the memory of anyone now living in the house.

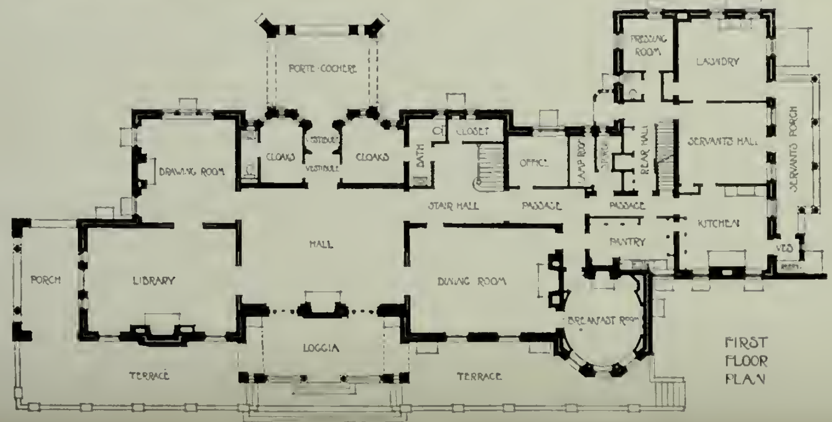


But before any details of ornament or construction are appreciated, one stands captive to the wonderful harmony of color that plays over the whole exterior, emphasizing the close relationship between these two forms of burnt clay. This harmony is attributed to the original polychrome treatment of the terra cotta in shades of red and orange. These have long since faded into a soft rich assemblage of russets, orange, salmon and straw colors, all melting into a warm cream and toning in wonderfully well with the salmon and blue of the brickwork.

The roof, too, is a clay product; the tiles were originally red but now faded into maroons and slate greens, having the effect of shingles, the same in size but somewhat thicker. They are fastened to the roof battens by little oak pegs driven through the tiles and close against, but not into, the batten. This prevents the tiles from sliding while their weight is proof against the wind. From the inside, as in all those old roofs, innumerable little shafts of light gleam through, which fact never retards the owner's solemn assurance of perfect weather-tightness.

As has been said, the fortunes of the Westons steadily declined. After the death of Sutton's founder — a soldier, ambassador, judge, courtier, art patron, who managed to hold to his Romanism and to weather through thirty-three years of service all Henry's passions of rule, religion, friendship, and love — after Sir Richard's death the family is hardly heard of again, though Elizabeth made them much envied by paying three visits to Sutton. This was to the old man's grandson Henry, named after the treacherous king who had beheaded his father, young Sir Francis, Richard's only son, on a flimsy charge of being Anne Boleyn's lover. Unlike his namesake, the little Henry grew up to be a good man, and though his tenacity to Catholicism forbade his holding any position at court, Elizabeth was known to have a warm personal attachment for him and his distinguished wife, Dorothy Arundel. Perhaps the link of fate between the Queen's mother, Anne Boleyn, and her host's father, the gay young Sir Francis, was what made her always stop at Sutton on her way from Losely, Cowdray, and other manor houses she frequented. And then combined with this was the fact that the Lady Dorothy was her cousin. During one of her visits a serious fire broke out in the west wing, and even royal favor did not go to the generous extent of repairing it.

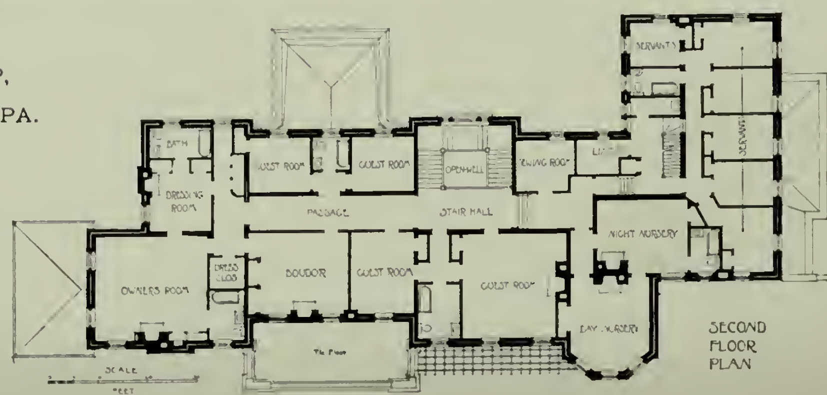
This portion of the house which held the main apartments originally, is to-day but four empty walls; every partition is gone. The family have since occupied the south, where the great hall is, and the east wing, formerly the servants' quarters. None of the furniture and tapestry here is of the original stock, that having all disappeared; but I was shown the few remaining



FIRST FLOOR PLAN

HOUSE IN
RADNOR TOWNSHIP,
DELAWARE COUNTY, PA.

GEORGE BISPHAM PAGE,
ARCHITECT.



SECOND FLOOR PLAN

INTERIOR VIEWS.

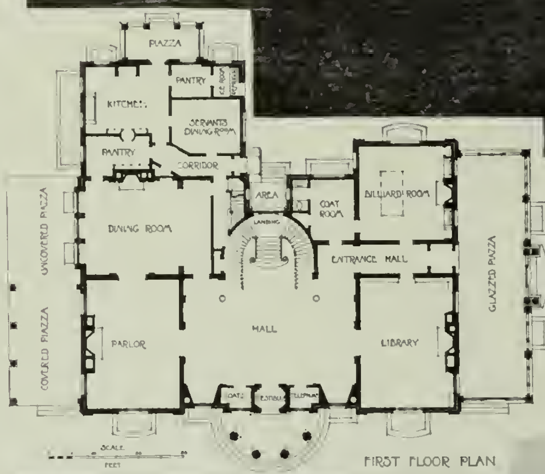
HOUSE IN RADNOR TOWNSHIP, DELAWARE COUNTY, PA.

George Bispham Page, Architect.

GARAGE, RADNOR TOWNSHIP, DELAWARE COUNTY, PA.
GEORGE BISPHAM PAGE, ARCHITECT.

HOUSE AT LAKE FOREST, ILL.
FROST & GRANGER, ARCHITECTS.

HOUSE AT LAKE FOREST, ILL.
FROST & GRANGER, ARCHITECTS.



FIRST FLOOR PLAN

HOUSE AT WILLIAMSTOWN, MASS.

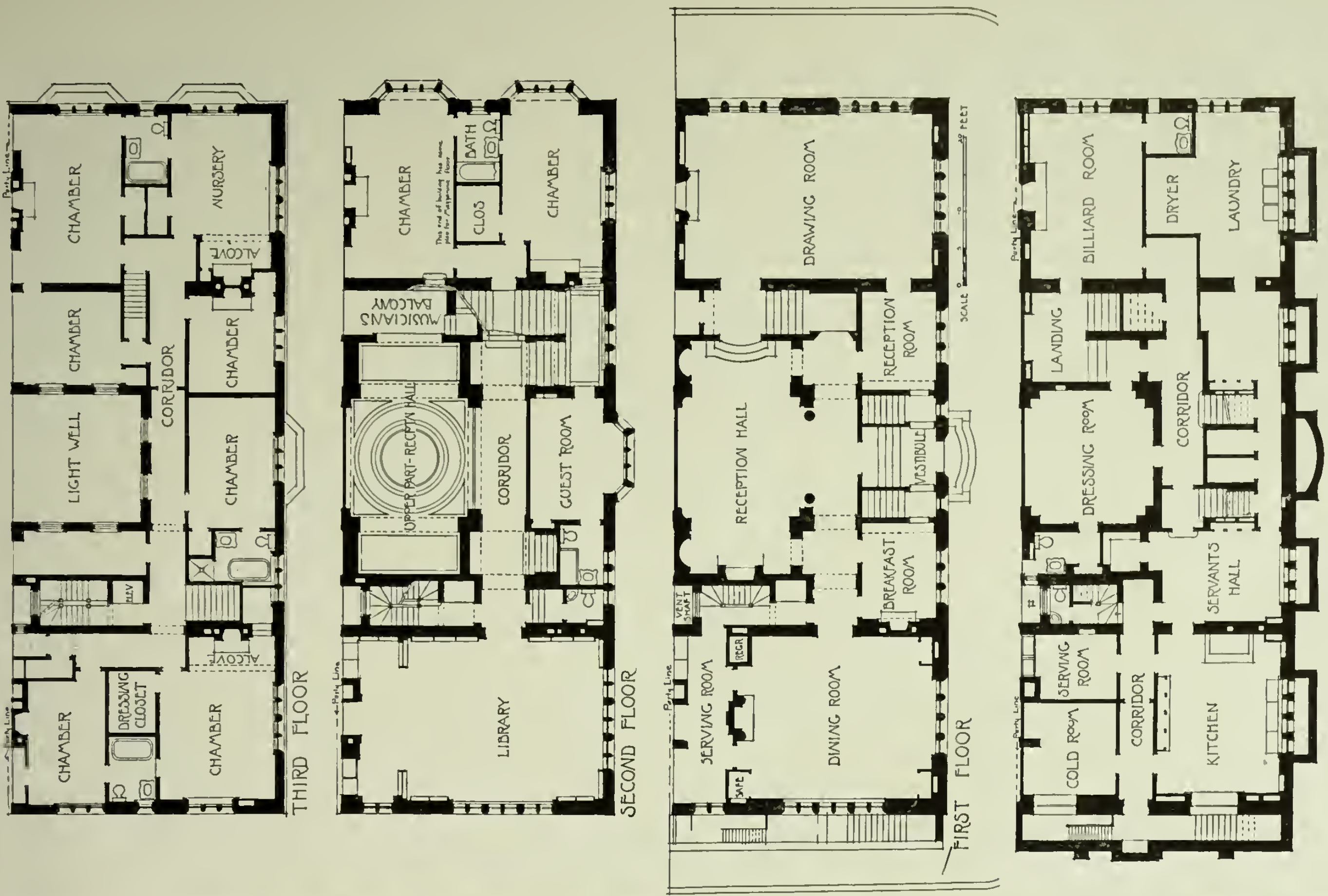
WINSLOW & BIGELOW,
ARCHITECTS.

SECOND FLOOR PLAN

DETAIL OF PORTICO.
HOUSE AT WILLIAMSTOWN, MASS.
WINSLOW & BIGELOW, ARCHITECTS.

HOUSE AT PHILADELPHIA, PA.

Frank Miles Day & Brother, Architects.



HOUSE AT PHILADELPHIA, PA.
FRANK MILES DAY & BROTHER, ARCHITECTS.

INTERIOR VIEWS.

HOUSE AT PHILADELPHIA, PA.

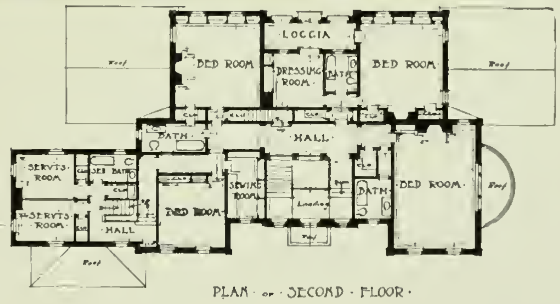
Frank Miles Day & Brother, Architects

INTERIOR VIEWS.

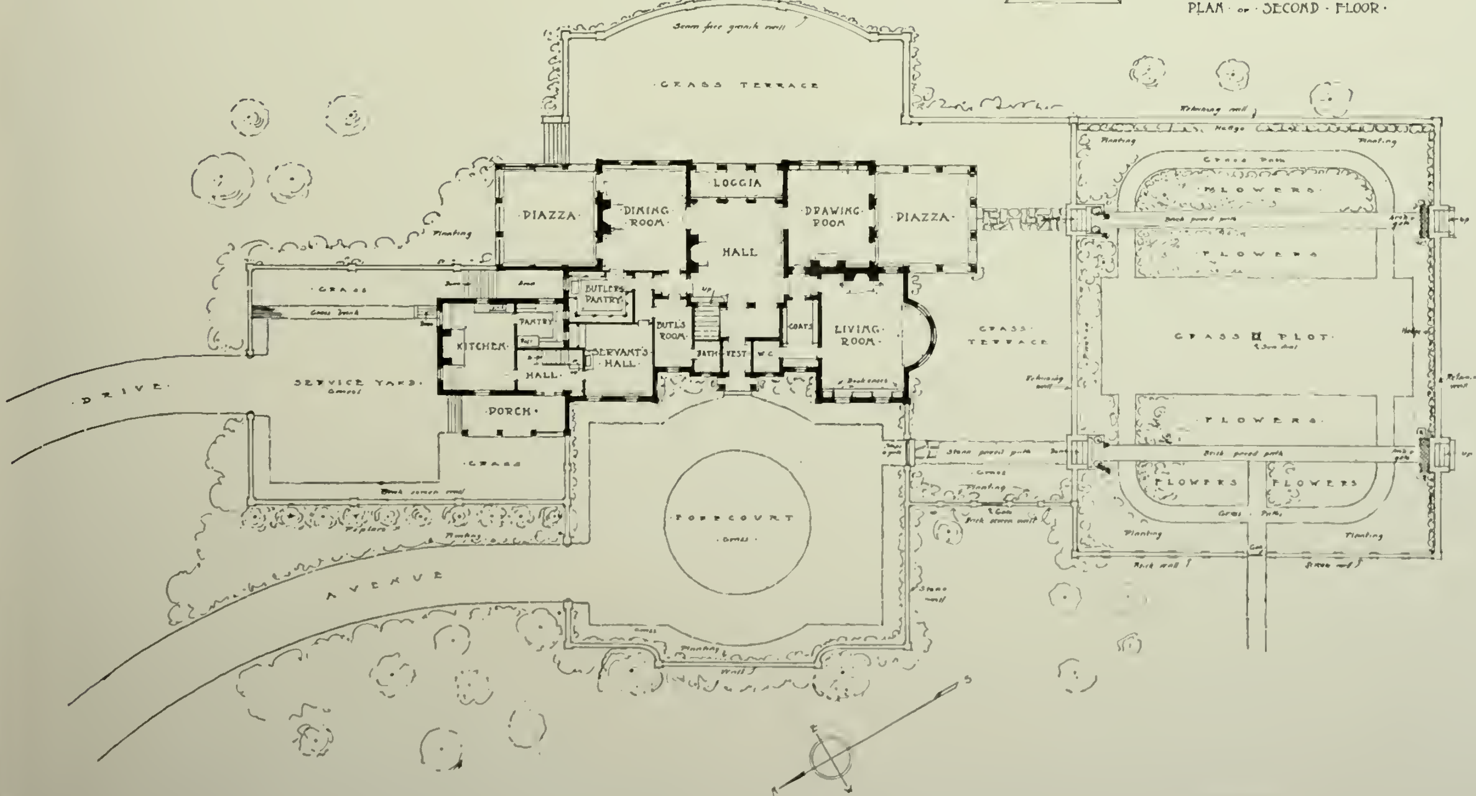
HOUSE AT PHILADELPHIA, PA.

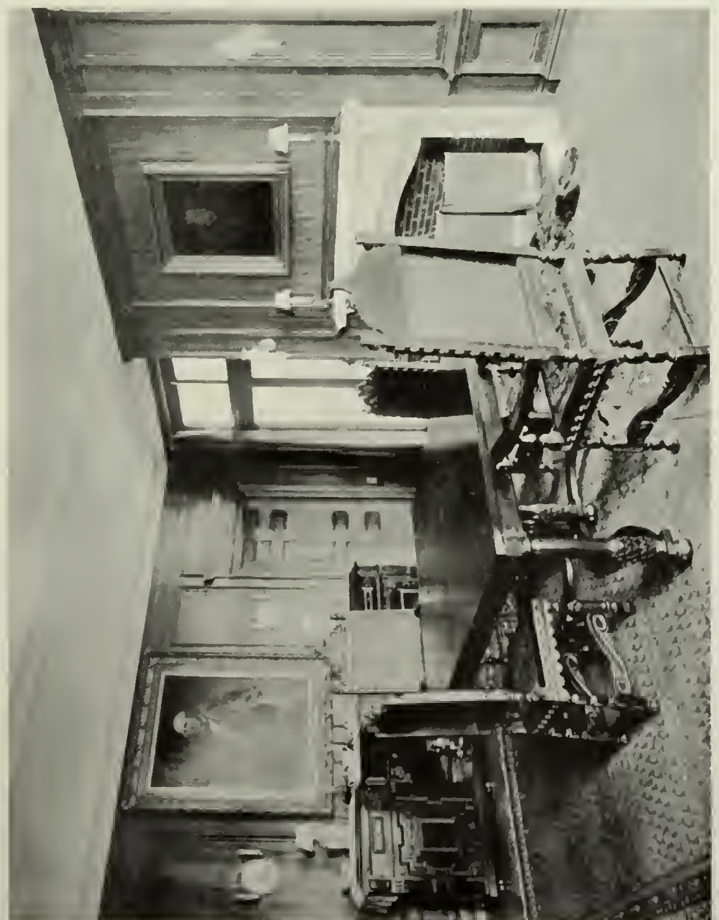
FRANK MILES DAY & BROTHER, ARCHITECTS.

A HOUSE AND GARDEN
AT WENHAM, MASS.
WILLIAM G. RANTOUL, ARCHITECT.



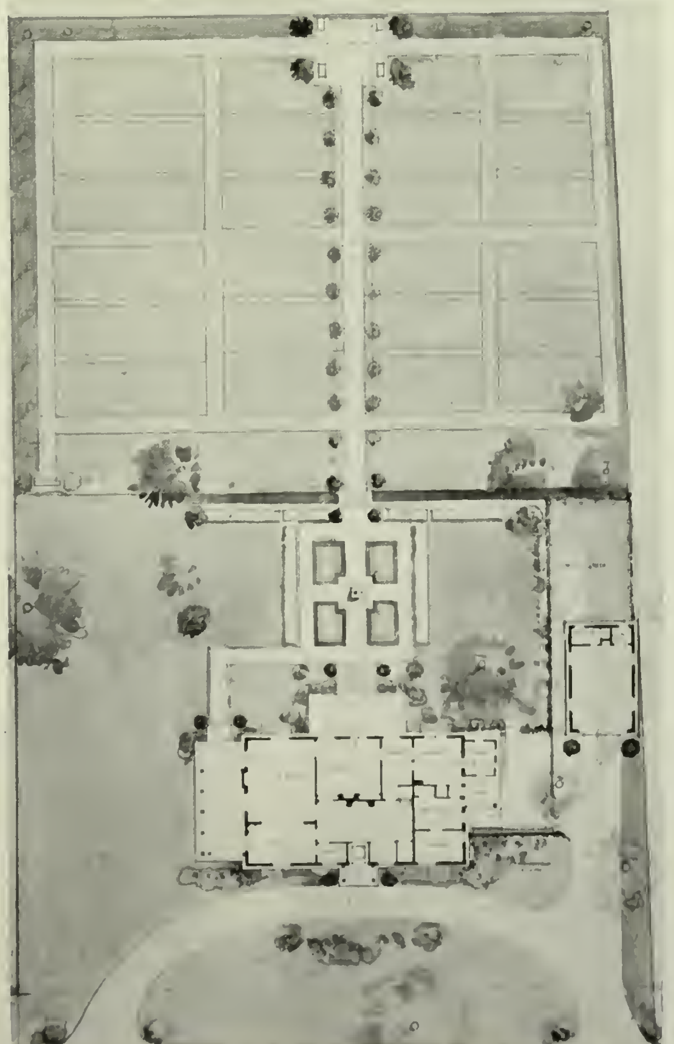
PLAN · OF · SECOND · FLOOR ·





A HOUSE AND GARDEN AT WENHAM, MASS.
WILLIAM G. RANTOUL, ARCHITECT.

HOUSE AT ARDSLEY-ON-THE-HUDSON, N. Y.
DELANO & ALDRICH, ARCHITECTS.



portraits, Queen Mary, Dorothy Arundel, the great grandson who married the Copley heiress, the Weston ladies of the eighteenth century, and many of the collateral Westons to whom Sutton passed in 1782.

This occupied portion — the great hall and the east wing — have little beyond the portraits that is old in the way of furnishings. The original flooring is there, though — 18 inch square blocks of smooth stone now covered with good Oriental rugs. Upstairs the floors are wood throughout. These are the original boards, 6 to 8 inches, and surface nailed with the large nail heads plainly visible. In a few rooms where new floors had been needed the boards were only 3 inches, blind nailed and usually bradded at the ends.

The woodwork is good, but not remarkable — terra cotta plays no part in the interior except for the mullions, which match the wood in color. Contrary to modern terra cotta building with reinforced iron, the walls of this early example are as thick as those in the old stone mansions of the day.

With so much inside of Sutton that is, if not positively new, at least far newer than the outside, it is a pleasure to see intact in the great hall the splendid painted glass that Sir Richard placed there. It is second to none in England and is of the same workmanship as the fragments in the Henry VII. Chapel at Westminster. These richly colored arms and devices, set high in the tall casement windows, send across the hall glowing reminders of the kings and queens who visited Sutton, of the illustrious families allied to it, of Sir Richard's many famous colleagues who paid with their heads for Henry's displeasure, while the honors of Weston ever increased. There are the red and white roses united; the Tudor portcullis and crown; the hawthorn and monograms of Henry of Richmond and Elizabeth of York; the arms of Catherine of Aragon, of Anne Boleyn — in fact, of the five of Henry's queens to whom the crafty old Sir Richard paid homage, though his only son had been beheaded by their capricious lord.

Thus almost untouched since its building, shaded by venerable limes, and with broad open upland all around, stands Sutton Place. No one has sought to improve it, no owner growing in fortune has thrown out a ponderous wing with fantastic gables and profusion of scrolls to mar the quiet refinement of its harmonious brick and terra cotta mass.

Though it bears traces of decadent fortunes, a gateway and front gone, one wing bare and deserted, huge stacks of chimneys from which the smoke never curls upward, the chapel and bell gone, many of the amorini still dancing bravely under lichens and mosses, grounds that cannot be kept up in a way to do it justice, yet Sutton is proud that, while other estates were changing hands or being forfeited to the Crown, it has remained always in the same family; though they were Catholics and royalists, they have held it through the Reformation, through the severe penal laws of Elizabeth, through the Civil War and the Protectorate, and under the Dutch and Hanoverian rule. It still stands like the beautiful House of Pride described in Spenser's Faerie Queene —

"A Stately Palace built of Squarèd Bricke."

DETAIL OF PATIO, INTERNATIONAL BUREAU OF AMERICAN REPUBLICS BUILDING.

LOCATED AT WASHINGTON, D. C. KELSEY & CRET, ARCHITECTS.

BUNGALOW BY PAUL BOURGEOIS, ARCHITECT.

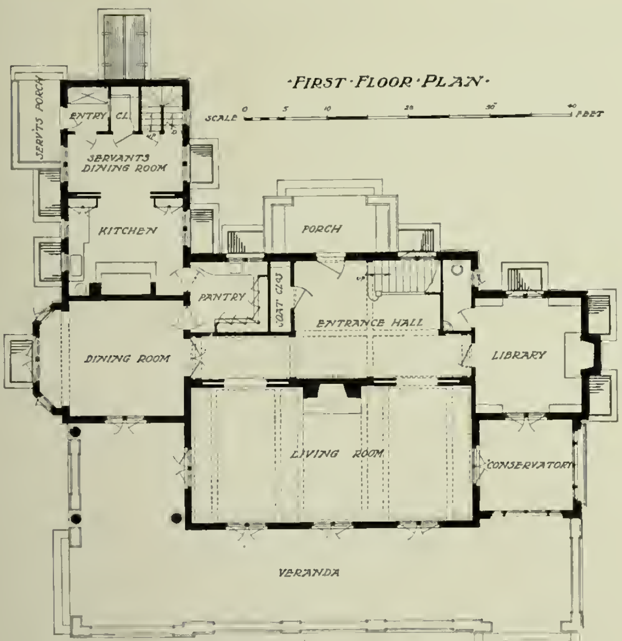
HOUSE BY FOSTER, GADE & GRAHAM, ARCHITECTS.

BATHING PAVILION.

PUMP HOUSE.

C. P. H. GILBERT, ARCHITECT.

A GROUP OF BUILDINGS BUILT OF TERRA COTTA HOLLOW TILE BLOCKS.



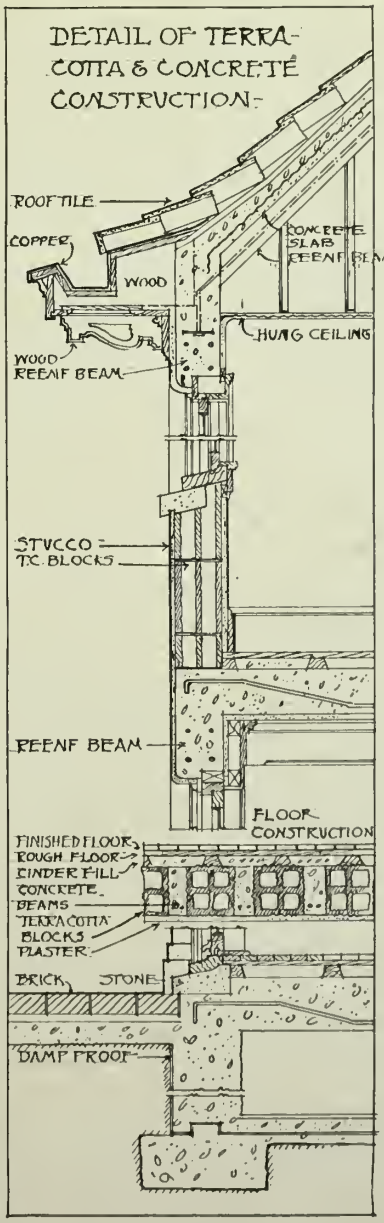
HOUSE AT

SPRINGFIELD,

MASS.

Built of terra cotta hollow tile blocks with plaster finish.

ROBINS & OAKMAN,
ARCHITECTS.



Editorial Comment and Miscellany.

MR. STURGIS AND THE BOSTON SCHOOLHOUSE COMMISSION.

IN THE May issue comment was made in these columns on the dismissal of Mr. Perkins by the Chicago Board of Education. We are now forced to note the retirement, from the same field of endeavor, of Mr. Sturgis, who has for eight years been chairman of the Schoolhouse Commission of Boston. Thus, within a brief time, two out of the four leading experts on schoolhouse construction have been forced to cease their labors for the public good. For while the formalities of the two cases were somewhat different, in that while Mr. Perkins was dismissed Mr. Sturgis voluntarily resigned, it was merely another manifestation of the same underlying force that drove Mr. Sturgis to end a public service in which he took the keenest interest and by his performance of which he has placed Boston among the real leaders in scientific school building.

It was primarily a lack of real appreciation and support of expert service that moved in each case.

For eight years Mr. Sturgis carried forward the study of the problems involved with a thoroughness that brought consistent progress, evidenced in a series of annual reports of recognized authority as well on broad questions of planning as on the minor details of construction and fittings. Standards were quickly established by which to determine economical planning, and these standards were carefully adjusted to the shifting requirements of the primary, grammar, and high school grades. An immense amount of this work fell necessarily on the shoulders of Mr. Sturgis, for however able the other commissioners might be, it demanded a man of professional training to direct a steadily and consistently progressive policy of construction in a series of schools designed by various independent architects.

It is not to be wondered at that during these years Mr. Sturgis gained the conviction that there was needed on the Commission at least one other who could relieve the chairman of many details of the work demanding professional supervision, freeing the chairman's time for the consideration of the larger problems.

It *is* to be wondered at that anyone with less experience in the work should see fit to combat Mr. Sturgis' conviction; and that the Civil Service Commission should have approved the Mayor's recent nomination to the Board against the judgment of Mr. Sturgis, even had it gone without confirmatory evidence from the building trades, is one of those official errors that unfortunately can be neither explained nor remedied.

The man who dives in shallow water cannot lay all the blame to the water if he strikes his head against the bottom. So if, in the course of his political appointments, an unfit man is by some chance confirmed, Mayor Fitzgerald cannot shift the blame entirely on the confirming commission, but must shoulder the responsibility for the initial action in the appointment, and in this case must bear the responsibility of the resultant loss to the public service of one of its few expert officers.

Perhaps the greatest wonder is that Mr. Sturgis has kept himself in the service so long. The constant fight that is necessary with the different forces that hinder the best progress of work in municipal departments must have put great strain on his sense of public duty; and his desire to see the department to which he had devoted so much labor established on a firm basis which would insure continued sane progress must have clashed often with his desire for surcease from the petty annoyances under which he worked.

To his strong and logical stand for first class construction, the coming years will pay tribute in practical results. Unfortunately, however, permanence of construction is less spectacular than low first cost, and it takes an enlightened public opinion to support an official who has the wisdom to adopt and the courage to maintain a far-seeing policy whose watchword is, "It's cheaper in the end," which, after all, is the true economy.

It is rather amusing, to those who have some insight into the professional problems involved in the work, to find that the chairman of the School Committee is willing to state publicly that he does not believe it is necessary to have an architect as chairman of the Schoolhouse Commission. Verily the unpardonable sin is ignorance of one's own ignorance.

After all, as has been noted in the press editorially, the unfortunate retirement of Mr. Sturgis is but an unusually suggestive sign of the political conditions now existing, which tend to drive from public service the particular type of man most needed at the present day, of which type Mr. Sturgis is a conspicuous example.

THE SMALL BRICK HOUSE COMPETITION.

AWARD OF PRIZES.

THE Jury for the Small Brick House Competition which was conducted by THE BRICKBUILDER has awarded first prize ($500) to William Boyd, Jr., Pittsburg; second prize ($250) to Francis D. Bulman, Boston; third prize ($150) to Steward Wagner, New York; fourth prize ($100) to A. R. Nadel, Boston; first mention to C. Edward Arnemann, Weehawken, N. J.; second mention to D. D. Barnes and W. A. Neate, Boston; third mention to Charles F. Hogeboom, Brooklyn; fourth mention to Albert G. Hopkins, Boston; fifth mention to Charles Sumner Schneider, Cleveland; sixth mention to Howard A. Goodspeed, Boston.

The competition was judged in Pittsburg, June 7th and 8th, by Messrs. Benno Janssen (Janssen & Abbott); Howard K. Jones (Alden & Harlow); Frederick A. Russell, Frank E. Rutan (Rutan & Russell); and Albert H. Spahr (MacClure & Spahr).

The Prize and Mention designs with the report of the Jury of Award will be published in THE BRICKBUILDER for July.

The series of articles, "Hints on Architectural Acoustics," by Hugh Tallant, begun in THE BRICKBUILDER for May, will be resumed in the July number.

HOUSE RECENTLY EXHIBITED IN MADISON SQUARE GARDEN, NEW YORK.

Built of terra cotta hollow tile blocks, with plastering applied direct to the blocks both inside and out. This house was not "poured," nevertheless it was built complete in every detail in fifty-six hours.

Plate Illustrations—Description.

House in Radnor Township, Delaware Co., Pa. Plates 73, 74, 75. The house is situated on high ground falling away to the south. The porte-cochère and front entrance are on the north side. The roof is of tiles ¾ inch thick, with a general tone of dark red, the monotony of which is relieved by the use of about five different shades put on at random. The walls are of re-pressed red brick laid up with dark mortar joints. They consist of an outer and an inner wall, each 9 inches thick, of brick, with a 4 inch air space between. The interior bearing walls are of brick and the partitions of hollow tile. Upon the interior, the main hall, the stair hall and stairway are wainscoted to the ceiling in fumed oak paneling. The dining room is wainscoted in oak to a height of 5 feet with the wall space above divided into large panels, covered with red Italian damask. The woodwork in the library is of Italian walnut with a wainscot 6 feet 6 inches high, while the finish in the breakfast room is white, with the wall spaces divided into large panels above a low wainscot and treated in gray tones. The cost of the house approximates 17 cents per cubic foot; the cubical contents being taken from the cellar floor to half the height of the roof. The porte-cochère loggia and covered porches are also included in the cubical contents, but no account is taken of the uncovered terraces or the wall enclosing the kitchen yard. The cubing does not apply to the stable buildings, etc. These latter consist of a garage with men's rooms and water tower above, the greenhouse with a potting house attached, the stable with coachman's and men's quarters, and the barn. These buildings are all connected to the house by walls, giving a series of courts and forming a group of buildings in one composition.

DETAIL BY ALEXANDER C. ESCHWEILER, ARCHITECT.
American Terra Cotta Company, Makers.

House at Williamstown, Mass. Plates 78, 79. The exterior is treated in brick, painted white. The interior detail is painted white, with doors of mahogany or of glazed sash. The only exception to the general treatment is in the billiard room, which is finished in gum wood in its natural color.

A House and Garden at Wenham, Mass. Plates 84, 85. The house is situated on a knoll overlooking a lake. It is built of Harvard brick with a base course of granite, limestone trimmings, wooden cornice and copper gutter. The roof is shingled in double courses 7 inches to weather, stained a weathered gray. The avenue of approach leads to a fore-court enclosed by high brick walls on part of two sides and a low stone wall on the other with a border of planting around the base. The hall is paneled to the ceiling and painted white, while the dining room is paneled to the ceiling in gum wood. French windows on either side of the mantel open upon a screened breakfast porch which overlooks the lake. From the music room, which has gray panels extending to the ceiling, are French windows opening on to a covered porch overlooking the garden. The library is paneled in oak with a limestone mantel and fireplace at the east end and bookcases from floor to ceiling at the west end.

House at Ardsley-on-the-Hudson, N. Y. Plate 86. This house is on high ground overlooking the Hudson River, in consequence of which the principal rooms are all placed on the west side. The plan is simple and compact. The rooms are finished inside with white paint, except the dining room, which is paneled and painted a light French gray. The house is built of hard burned brick of

SALES GARAGE FOR THE CHICAGO MOTOR CAR COMPANY, CHICAGO.

Trim of white enameled terra cotta by the Northwestern Terra Cotta Company.
Albert Kahn, Architect.

an exceptionally bright red, with a wooden cornice and trim painted white, and with blinds painted white and a bluish green. The cost amounted to about 33 cents per cubic foot, reckoning the height from the basement floor to the middle of the roof. The contract pr ce was about $26,000.

INTERIOR, CHURCH OF OUR LADY OF MERCY, BROOKLYN.
Interior finish entirely in burnt clay. The bricks are a light buff shade, furnished by Fiske & Co. The ceiling is of Guastavino tile of a soft pink shade. The terra cotta is executed in white, greens and yellows, and was made by the Atlantic Terra Cotta Company.
T. H. Poole, Architect.

GREATER BERLIN.

PLANS for a "Greater Berlin" have just been worked out as the result of a prize competition between leading architects, builders, and town planners. Prizes of £1,250 each have been awarded for schemes which provide for three generations into the future and contemplate the Berlin that will be in the year 2000, which is fixed as the period when the capital will teem with a population of 10,000,000. It is proposed to avert the evils of such an immense population by a far-sighted plan to regulate the construction of street buildings and parks so carefully that overcrowding will be practically impossible.

THE EXHIBITION AT BERLIN.

FACE OF BRACKET.
Ketcham Terra Cotta Works, Makers.
Charles R. Greco, Architect.

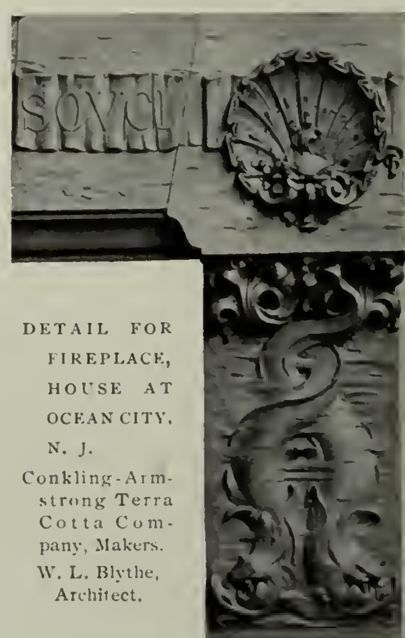
A VERY interesting exhibition has just been opened in Berlin; unique, too, of its kind, as nothing like it has been attempted in any other country. It is, as described by the Berlin correspondent of the *Observer*, an assemblage of all that can direct the makers of cities in the laying-out, building, and organization of an ideal place of residence for populations, large or small. Plans, pictures, photographs, and models of parks, streets, and houses are to be seen, and not alone of the Greater Berlin of the future, which is even now engaging municipal attention in the German capital, but of cities like London, New York, Paris, Boston, and Chicago. It is recognized in Germany that a great, and perhaps the chief, glory of the nineteenth century is the public awakening, which occurred during its last quarter, to the so-called "social question," and particularly that part of it which is concerned with the organization of towns with a view to dwelling, to transport, and to the exploitation of the town's natural surroundings for keeping strong and healthy its inhabitants of every class down to the poorest.

BUILDING OPERATIONS FOR MAY.

OFFICIAL returns from forty-four cities throughout the country regularly reported to *The American Contractor*, New York, show an aggregate loss for May, 1910, of seventeen per cent as compared with May, 1909. The decrease in the great building centers, New York and Chicago, some $12,000,000, must accept nearly all the blame for the shortage.

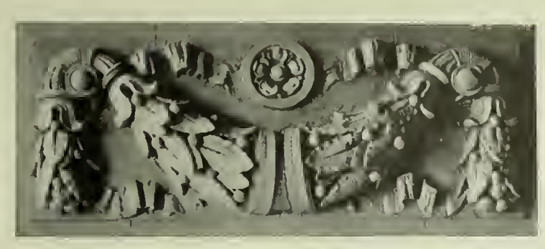
IN GENERAL.

Three graduate fellowships in architecture are announced by the University of Pennsylvania for annual award during a term of years beginning in September, 1910. These awards are based upon a fund established for the purpose by the General Architectural Alumni Society of the University. The fellowships are open, without restriction as to age, to graduates of American schools who hold a bachelor's degree in architecture equivalent to that



DETAIL FOR FIREPLACE, HOUSE AT OCEAN CITY, N. J.
Conkling-Armstrong Terra Cotta Company, Makers.
W. L. Blythe, Architect.

of the University of Pennsylvania. Inquiries regarding the fellowships may be addressed to Warren Powers Laird, Professor of Architecture, University of Pennsylvania, Philadelphia.



DETAIL BY ROUSE & GOLDSTONE, ARCHITECTS.
New York Architectural Terra Cotta Company, Makers.

A series of University Extension Courses will be given in Boston during the coming winter under the direction of Harvard University. These courses will be of college grade and will count for a college degree. Tuition fees vary from $5.00 to $20 00 a course. Full information may be had from the Commission on Extension Courses, University Hall, Cambridge, Mass.

The Ohio State University, Columbus, Ohio, has issued an attractive pamphlet descriptive of the work which is carried on in its Department of Architecture.

H. Toler Booraem, architect, Morristown, N. J., died at Saranac Lake, N. Y., June 3d. Mr. Booraem had for a number of years looked after the building interests of the Mutual Life Insurance Company of New York.

DETAIL BY H. J. HARDENBERG, ARCHITECT.
New Jersey Terra Cotta Company, Makers.

The new Club House of the St. Louis Architectural Club, 514 Culver Way, was dedicated on Saturday, June 11th.

A new hotel costing approximately $650,000 is to be built at Galveston, Texas, Mauran & Russell of St. Louis, architects. With the establishment of a chain of hotels on the western coast of Florida, and the building of the hotel at Galveston, in addition to the admirable hotels now at San Antonio, Texas, the southern Atlantic and gulf coasts are likely to become an American "Riviera" where tourists may journey nearly to the borders of Mexico and be assured of the best hotel accommodations.

Walter J. Skinner and C. Wellington Walker, Jr., have formed a co-partnership for the practice of architecture under the firm name of Skinner & Walker, offices Newfield Building, Bridgeport, Conn. Manufacturers' catalogues desired.

DETAILS FOR SCHOOLHOUSE.
South Amboy Terra Cotta Company, Makers.
C. B. J. Snyder, Architect.

The firm of Charles W. Dawson, architect, is succeeded by the firm of Dawson, Kedian & Valeur, offices Iowa Building, Muskogee, Okla.

William H. Boylan, architect, formerly of the firm of Merchant & Boylan, has taken offices in the National Bank of New Jersey Building, New Brunswick, N. J. Manufacturers' catalogues desired.

Charles E. Tousley and Victor E. Thébaud have formed a copartnership for the practice of architecture under the firm name of Tousley & Thébaud, offices Bangor Building, Cleveland.

Davis, McGrath & Kiessling, architects, have removed their offices from 1 Madison avenue to the Flatiron Building, New York.

Harry L. Brickell, architect, has opened an office at 403 West Ferry street, Buffalo, N. Y. Manufacturers' catalogues and samples desired.

The Atlantic Terra Cotta Company will furnish the architectural terra cotta for the following named new buildings: Pennsylvania Railroad Station at Baltimore, K. M. Murchison, architect (exterior and interior in polychrome); Jenkins Arcade, Pittsburg, O. M. Topp, architect (glaze and standard finish); Douglass School, Cincinnati, Ohio, Garber & Woodward, architects (mat glaze); Sinclair Building, Fourth Ave., New York, Carrere & Hastings, architects (standard).

The houses with walls of terra cotta hollow tiles, illustrated and described on another page of this issue, were built of "NATCO" tiles manufactured by the National Fire Proofing Company.

The Patio in the International Bureau of American Republics Building, Washington, D. C., a detail of which is illustrated on another page of this issue, has a large amount of polychrome terra cotta used in a decorative way. The work was furnished by the Atlantic Terra Cotta Company.

"Artistic Brick and the Textile Principle in Brickwork" is the title of an unusually attractive booklet which has just been issued by Thomas Moulding Company, Chicago. The work is especially valuable because of the new thought which it contains relative to the weaving of a wholesome and dignified texture into brickwork.

CAPITAL BY ALEX. BAYLIES, ARCHITECT.
Brick, Terra Cotta and Tile Company, Makers.

NEW BOOKS.

Distinctive Homes of Moderate Cost: Being a collection of country and suburban homes in good taste, with some value in suggestion for the home-builder. Edited by Henry H. Saylor. New York, McBride, Winston & Co.

Estimating Frame and Brick Houses: Barns, stables, factories, and outbuildings. Eighth edition, enlarged, amended and modernized, by Fred. T. Hodgson. Containing a detailed estimate of a $5,000 house and additions. Detailed estimates of kitchen, dining room, parlor, den, halls, bedrooms, conservatory, basement, bathroom, closets, etc., all figured out and measured by the quickest and simplest methods. Also showing how to estimate by cubing, by the square of floors or walls, and by the process of comparison; with hints and practical suggestions for taking measurements and making tenders for work. New York, David Williams Company.

The New Building Estimator: Third edition. A practical guide to estimating the cost of labor and material in building construction, from excavation to finish; with various practical examples of work presented in detail, and with labor figured chiefly in hours and quantities.

TABLE LEG.
Executed in terra cotta by the Atlantic Terra Cotta Company.

A handbook for architects, builders, contractors, appraisers, engineers, superintendents and draftsmen. By William Arthur. New York, David Williams Company.

Hicks' Builders' Guide: Comprising an easy, practical system of estimating material and labor for carpenters, contractors and builders. Revised and enlarged by I. P. Hicks. Price $1. New York, David Williams Company.

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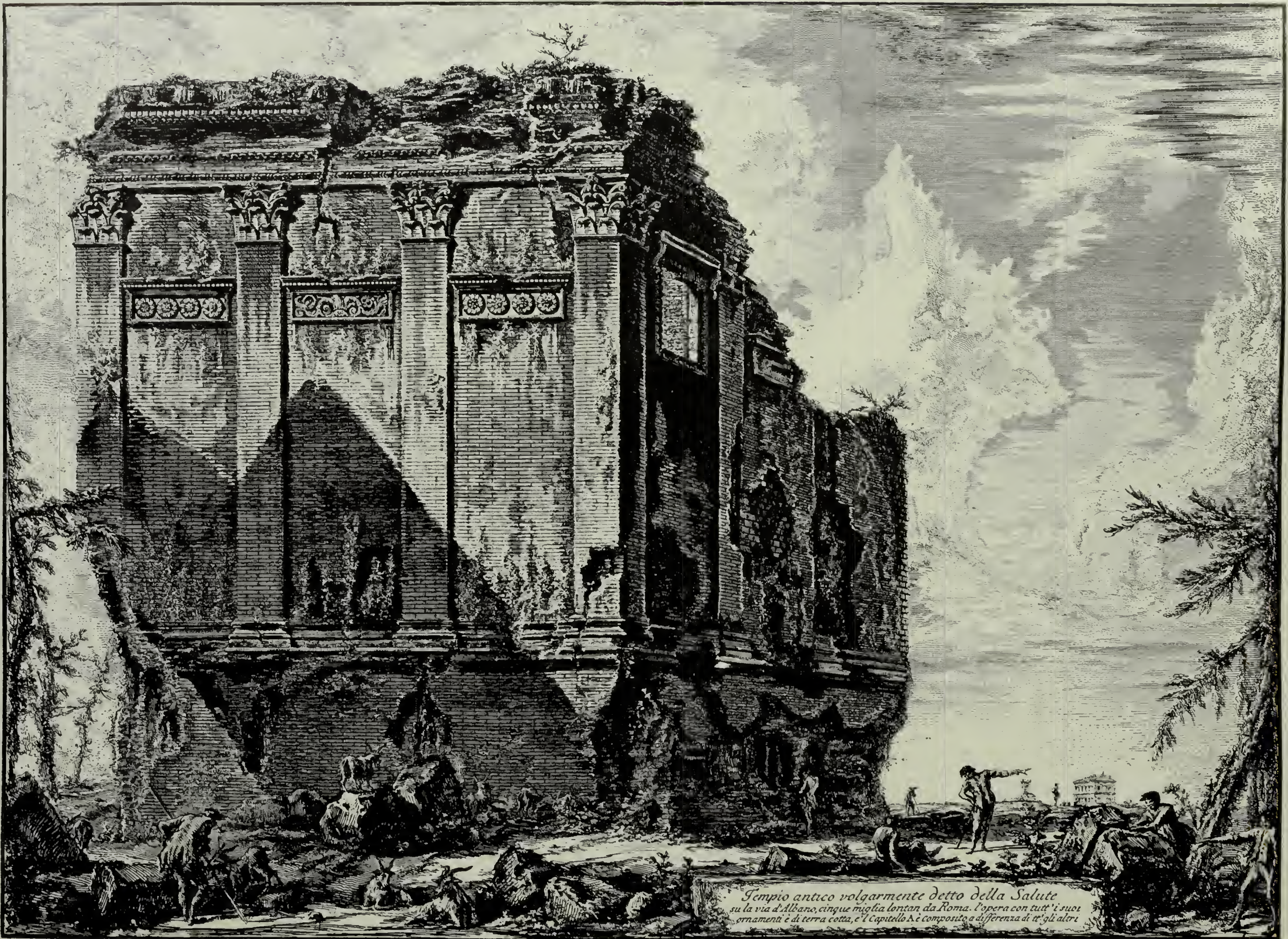
LETTERPRESS



RUINS OF A BRICK TOMB ON THE APPIAN WAY NEAR ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

The Appian Way, commenced in B.C. 312, was the great highway of communication between Rome and Greece and the Oriental provinces. The first fourteen miles between Rome and Albano was bordered on both sides with tombs, fountains, semicircular seats, etc. The brick tomb here engraved by Piranesi, with its interesting terra cotta ornament, is difficult to identify with any great degree of positiveness.

THE BRICKBUILDER

VOL. XIX. NO. 7. JULY, 1910.

Hints on Architectural Acoustics.

BY HUGH TALLANT.

PART II.

COMPUTATION AND PRACTICE.

THE first paper of this series discussed the relation between atmospheric vibration and the sensation of hearing, and gave reasons for believing that the acoustic qualities of an auditorium are dependent upon nothing more mysterious than its size, shape, material and contents, and the relative position of speaker and audience. All of these factors are known to the architect, and all except size are largely under his control. Theoretically, therefore, he is in a position to determine in advance the acoustics of an intended building, to account for the defects of an existing structure, and to make such corrections in design and arrangement as he may find necessary or desirable. The object of the present paper is to indicate how these theoretic possibilities may be practically realized. Accurate methods of computing loudness, distinctness, and quality of tone will be deduced and illustrated. The application of these methods to auditoriums of different sizes will be fully discussed, and means will be suggested whereby the most serious defects may be overcome without materially affecting the architectural treatment.

* * *

LOUDNESS. In a properly designed auditorium there is, or should be, a free and unobstructed view of the stage. Conversely, there should be a straight path by which one small portion of the sound-wave produced by the speaker's voice can travel direct to the ear of each member of the audience.* This portion of the wave will be called the "direct sound." Other portions which reach the hearer from time to time by deflection from the surrounding surfaces will be called the "deflected sounds." The latter are not infrequently audible after as many as two hundred deflections — that is, after they have traveled a mile or more, back and forth from wall to wall — and as the velocity of sound is only 1,200 feet a second, some of these deflected sounds may not reach the hearer until several seconds after the direct sound. In this way a single sound-wave may be heard as a prolonged tone, which gradually dies out as the last deflected sounds are absorbed by repeated impact.

As one-fifteenth of a second is the shortest perceptible space of time, all sounds which reach the hearer within any particular fifteenth of a second combine to produce a single sensation whose intensity varies with the number and loudness † of the component sounds. For the present we are concerned with only the initial loudness — that is, the effect produced by the sounds which reach the hearer during the first fifteenth of a second. This initial loudness is dependent upon four factors, namely: the intensity of the original sound-wave, the number of sounds arriving within the first fifteenth of a second, the distance traveled by each of these sounds, and the amount of each absorbed by impact before reaching the hearer. It is now proposed to show how these four factors may be determined from data at the disposition of the architect.

The intensity of the original sound-wave is evidently an extremely variable quantity, dependent upon the calibre of the instrument by which the wave is produced and the particular modulation imposed by the speaker or musician. What concerns the architect, however, is not how loud the sound happens mathematically to be in any particular case, but whether it is *loud enough*. On a quiet lawn it is possible to converse with reasonable facility to a distance of nearly 200 feet, but here the conditions are exceptionally favorable, owing to the almost complete absence of commotion and sound interference. In an auditorium, on the other hand, there are always sound-eddies whose effect cannot be estimated, and also a certain amount of rustle among the audience. Under these circumstances the direct sound of the speaker's voice cannot be comfortably understood to a distance of much more than 50 feet unless it is reinforced by one or more deflected sounds. We shall, therefore, assume that the original intensity of the sound-wave is such that a single portion of it can be comfortably heard and understood to a distance of 50 feet from the speaker; and we shall designate by the letter I the intensity (whatever it mathematically may be) of a single direct sound at this distance. I is therefore the intensity corresponding to minimum efficient loudness, and any sound or combination of sounds which falls below this standard will not be comfortably heard and understood.

The number of sounds reaching the hearer within the

* It is not necessary to complicate the discussion by the fact that humanity is blessed with a duplicate set of ears. Mathematically, no appreciable error is involved by neglecting this consideration, because any standard of loudness which may be adopted implies the simultaneous action of both ears.

† Intensity and loudness are not exactly equivalent terms. Equal intensity corresponds to equal loudness, but an increase in intensity does not involve an equal increase in loudness. Two pigs under the traditional gate do not make twice as much noise as one. This psychological fact is, however, immaterial to the present discussion, which contemplates merely the establishment of an equality of loudness throughout the rear of an auditorium.

first fifteenth of a second can be determined directly from the architect's preliminary drawings. Fig. 4 represents the plan of an auditorium whose enclosing walls are WX, XY, YZ, and ZW. S is the speaker and A the hearer. The direct sound of the speaker's voice reaches the hearer by the straight path SA. The deflected sounds reach him by crooked paths such as SBA, SCDA, etc.

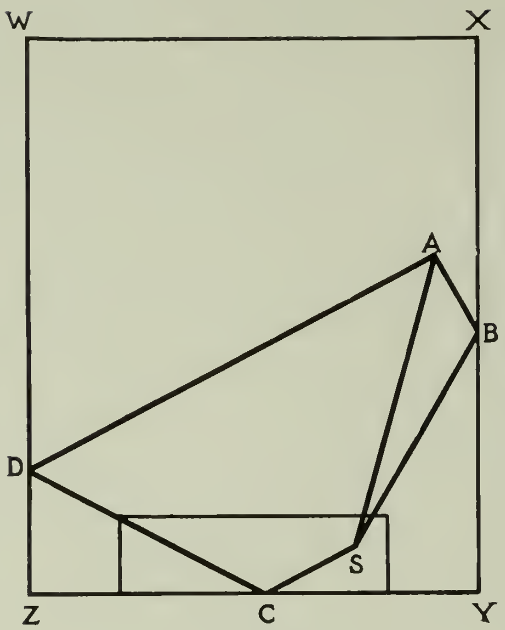


Fig. IV

The most important of the deflected sounds are those which reach the hearer after a single deflection. The paths of these sounds may be laid out by the geometric construction shown in Fig. 5. In this drawing WXYZ is the plan of an auditorium, and HIJK a vertical section. The speaker and listener are located respectively at S and A on the plan, and at S′ and A′ on the section. Draw AC perpendicular to XY, and prolong it to D, making CD equal to AC. Draw DS intersecting XY at B. B is the horizontal projection of the point of deflection, and SBA the horizontal projection of the path of the sound deflected from the wall XY. The actual length of the path is evidently the hypothenuse of a right triangle of which the legs are SBA and S′E. Similarly the length of the path of the direct sound is the hypothenuse of a right triangle having as legs SA and S′E.

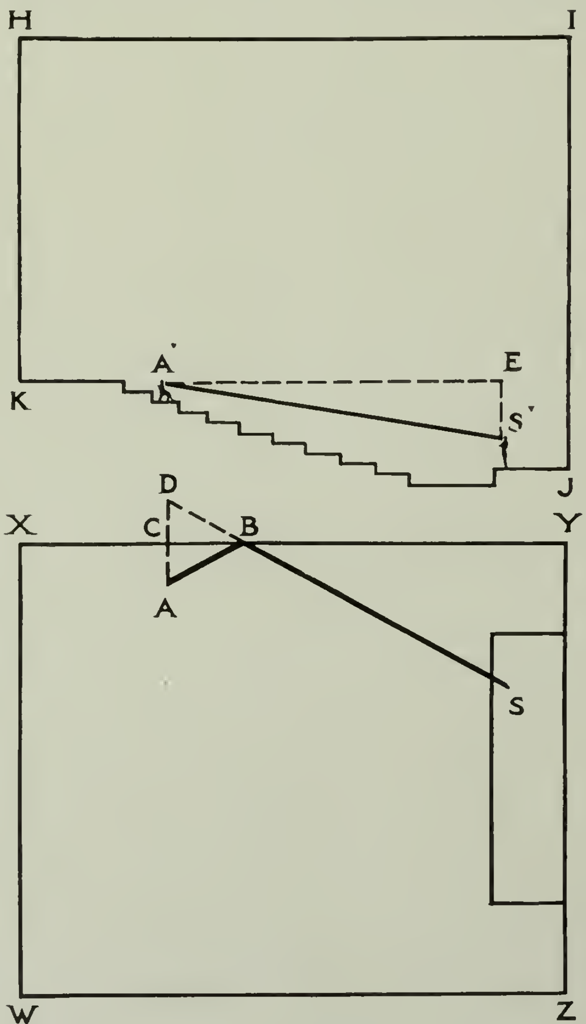


Fig. V

The diagram for two deflections is shown in Fig. 6 and for three deflections in Fig. 7. Similar geometricconstructions can be applied to any number of deflections, but in an auditorium over 50 feet in average dimension, sounds which have been deflected more than twice rarely reach the hearer within the first fifteenth of a second, on account of the length of their paths. Of course sounds deflected from the rear wall are never available because they are likely to create sound interference. The total number of sounds which combine to produce the initial loudness is, therefore, distinctly limited, and for a rectangular auditorium can often be estimated by eye.

For curved surfaces the diagram is apt to be complicated. The most convenient procedure is to lay out the sound paths as accurately as possible, and then correct them by slight alterations in direction until the angles of deflection become approximately equal to the corresponding angles of incidence. Frequently, however, the number of deflected sounds and the length of their paths can be estimated with sufficient accuracy without an exact diagram. Fig. 8 represents a section — not necessarily vertical — of an auditorium surmounted by a spherical dome. This section is taken passing through S, A and the center of the dome. SBCDEFH is laid out accurately, the angles of deflection with the tangents at B, C, D, E and F being made exactly equal to the angles of incidence. If FH falls, as shown, just beyond A there will usually be as many sounds deflected to A in the plane of the section as there are points of deflection on the path SBCDEFH — in this case five. The longest path traveled by either of these sounds is approximately SBCDEFH, and if this distance is not over 70 feet longer than SA, all these deflected sounds will reach A within less than one-fifteenth of a second after the direct sound. A complete discussion of all possible cases of curvature would far exceed the limits of this essay, but the reader will readily extend the method above suggested to pendentives, niches, and other architectural surfaces.

When the principal sound paths have been plotted, their length can be scaled from the drawing, and the sounds corresponding to paths not over 70 feet longer than the path of the direct sound* may be selected as being the ones which combine with the direct sound to produce the initial effect of loudness.

The amount of each sound absorbed by impact before reaching the hearer can be determined from the same diagram. The points of impact are all located, and the architect is aware of the material of the deflecting surface at each point. He can therefore determine the

*See the discussion of loudness in the first article of this series.

fractional part of each sound absorbed in each deflection by reference to the following table of approximate absorbing capacities, which, for convenience, is reproduced here from the first article.

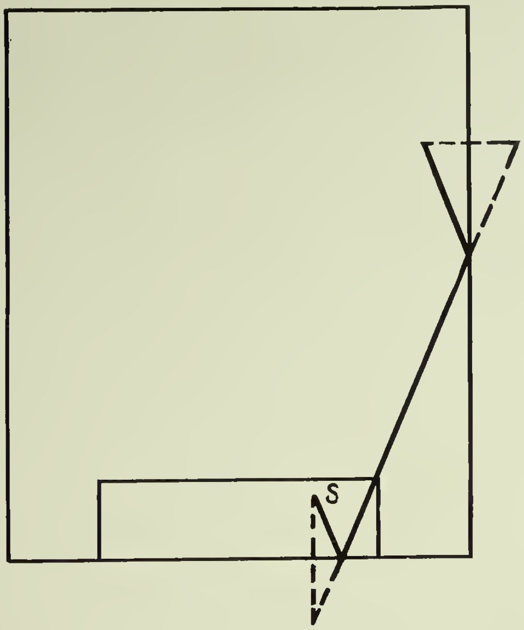


Fig. VI

Wall, floor and ceiling surfaces — such as wainscoting, wood or marble flooring, plastering, glass and masonry — absorb no sound.

Heavy curtains, rugs and carpets without batting absorb one-quarter of the sound.

Carpeting upon heavy batting absorbs one-half of the sound.

Cushions, ordinary upholstery, and heavy felting hung free from the wall absorb three-quarters of the sound.

The audience and very heavily upholstered furniture absorb all the sound.

The four factors of the initial intensity having been determined by the means above indicated, their combined effect can be computed by the following method: —

I is the minimum efficient intensity and corresponds to the intensity of a direct sound at 50 feet from the speaker. As the intensity of sound varies inversely as the square of the distance from its source, the intensity i of any single sound which has traveled a distance d from the speaker will be

$$i = I\,\frac{2500}{d^2}$$

It does not make any difference whether the distance d is traveled in a straight or a crooked line, but in the latter case proper reduction must be made for absorption by impact. For this purpose, the intensity must be calculated to the first point of deflection and then reduced by the proportionate amount absorbed in the first impact. The distance which would have caused this total reduction must then be calculated and added to the distance between the first and second points of deflection. The intensity at the second point of deflection may then be calculated, further reduction made for the loss due to the second impact, and so on until the sound reaches the hearer. In this way the final intensity of each sound reaching the hearer within the first fifteenth of a second may be determined. These intensities may then be added together. If the total is as great as I, then the combined effect of the component sounds will be *loud enough*. If the total is less than I the combined effect will *not* be *loud enough*. This procedure will be best understood from the following illustrative example.

The direct sound to a hearer seated 60 feet from the speaker, is reinforced by a deflected sound which travels 25 feet to a curtain, from which it is deflected 45 feet further to the hearer. Will the resulting sound be loud enough ?

The intensity of the direct sound on reaching the hearer is

$$i = I\,\frac{2500}{60 \times 60} = 0.7\ \ I$$

The intensity of the deflected sound at the point of impact is

$$i_1 = I\,\frac{2500}{25 \times 25} = 4\ \ I$$

One-quarter of the deflected sound is lost by impact with the curtain, therefore after the impact

$$i_2 = \tfrac{3}{4}\,i_1 = 3\ \ I$$

The distance corresponding to this reduced value is

$$d_1 = \sqrt{\frac{2500\ \ I}{3\ \ I}} = \sqrt{833} = 29$$

Adding to d_1 the 45 feet from the point of impact to the hearer we have

$$d_2 = d_1 + 45 = 74$$

Upon reaching the hearer the intensity of the deflected sound is

$$i_3 = I\,\frac{2500}{d_2^2}\ \ I = \frac{2500}{74 \times 74} = 0.46\ \ I$$

The total intensity of the direct and deflected sounds upon reaching the hearer is

$$i_4 = i + i_3 = 0.7\ \ I + 0.46\ \ I = 1.16\ \ I$$

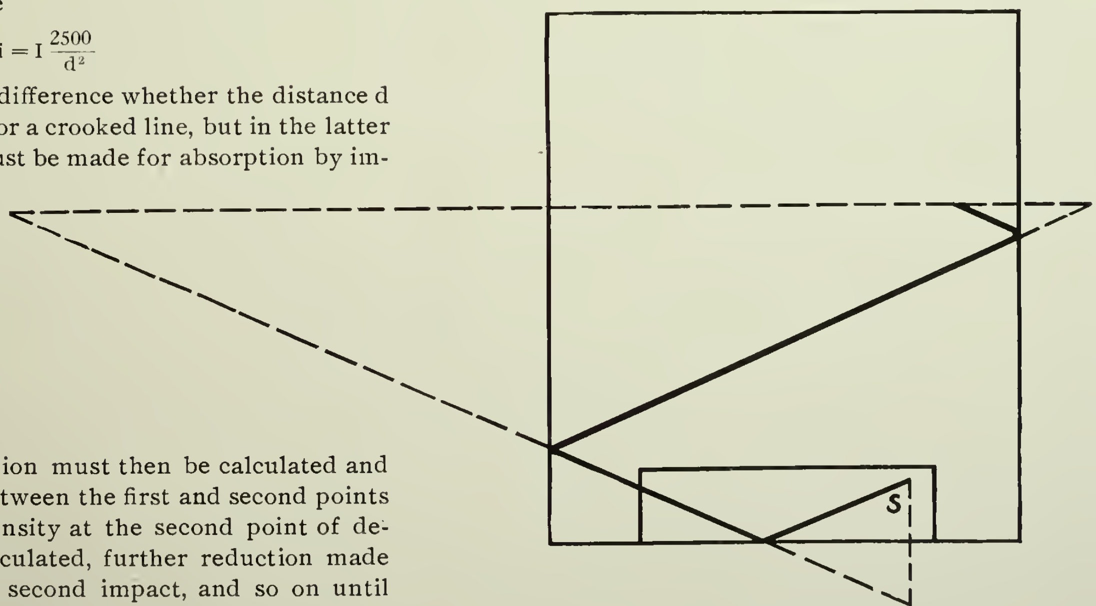


Fig. VII

As the total intensity is above the standard I, the combined sound will be loud enough.

This method of determining loudness appears somewhat formidable, but in practice it is rarely necessary to perform such a calculation as illustrated above. The number and intensity of the deflected sounds can usually be estimated by eye with sufficient accuracy, and even where computation is necessary it is usually simplified by the fact that the deflected sounds strike either among the audience, where they are wholly absorbed, or upon plaster, glass or wood, by which they are practically unaffected.

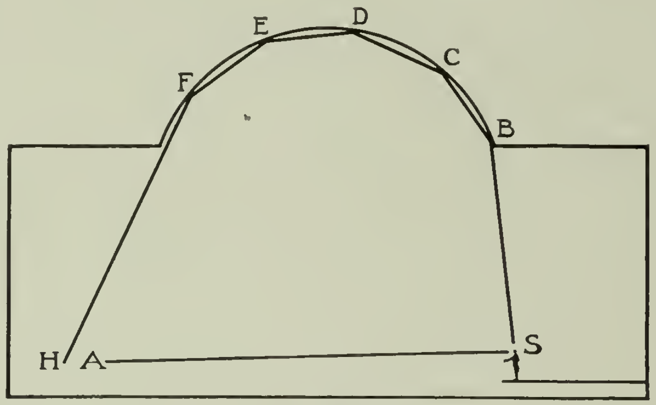


Fig. VIII.

Distinctness. The conditions of distinctness are three: There must not be sound interference, excessive reverberation, or echo.

As explained in the first article, some measure of sound interference will always unavoidably exist in any enclosed space, but the effects are not likely to become a serious menace so long as no sound is deflected to the audience from the rear wall, that is, the wall opposite the speaker. The methods of accomplishing this result are not in the nature of computation and will, therefore, be discussed later on in connection with practical design and construction.

Reverberation is prolongation of tone produced by repeated deflection of the various portions of a single sound-wave. We have just discussed its initial intensity in connection with the question of loudness. The most convenient measure of the total amount of reverberation is the length of time that it remains audible after its original cause has ceased. Methods of computing this duration of audibility will be given in the discussion of quality of tone, but it may be said here that for musical purposes a calculated reverberation lasting 1.1 seconds gives the best results in a small auditorium. For speaking purposes the time of reverberation should be as much shorter as possible.

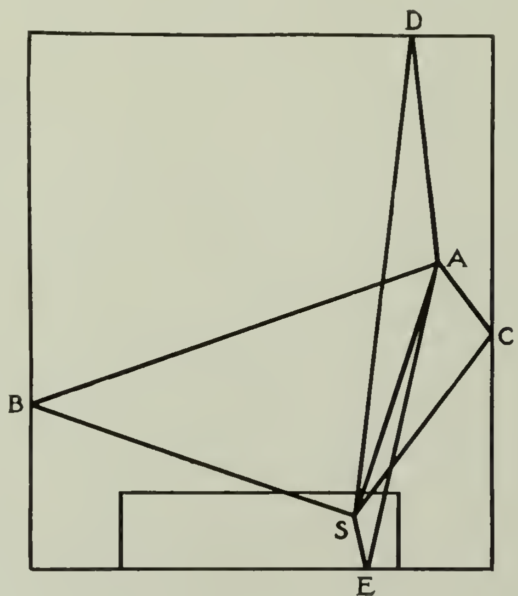


Fig. IX

In an auditorium whose dimensions exceed 50 feet any reverberation is likely to result in indistinctness, because the first deflected sounds may not reach the hearer until one-fifteenth of a second or more after the direct sound. This will be better understood by referring to Fig. 9, which represents the plan of an auditorium of indefinite size. S is the speaker, whom we will suppose to be standing toward the side where the hearer at A is seated. One sound of the speaker's voice will travel direct to the hearer by the path SA. Four others will reach him after one deflection by the paths SBA, SCA, SDA and SEA, and two more will arrive after a single deflection from the floor and the ceiling. But now suppose that the speaker happens to be standing on the front of a theater stage. The sound E will then be engulfed by the proscenium arch. D must be intentionally destroyed to prevent sound interference. The sound which strikes the floor will be completely absorbed by the audience, and if the auditorium is much over 50 feet wide and high the sound B and the sound from the ceiling will arrive one-fifteenth of a second or more after the direct sound. The sounds of double and treble deflection will arrive even later, and consequently there will remain only the sound C to break a perceptible interval of one-fifteenth of a second between the arrival of the direct sound and the arrival of the first deflected sounds. The chance that C may happen to be deflected to one side by some irregularity of moulding, or absorbed by some curtain fold is extremely large, and there is a serious risk that the first deflected sounds may not reach the hearer until so long after the direct sound as to produce indistinctness.

Theoretically, this contingency may be corrected by proper inclination of the deflecting surfaces. Practically, the architect is seldom in a position to adapt his design so closely to theoretical lines; even if the labor of investigating and reconciling the conditions of some hundreds of seats were not almost prohibitive. Moreover the problem is altered with every change in the position of the speaker, and where, as in the case of a theater or opera house, the actor or singer has a considerable freedom of movement, the alteration in the mathematical conditions may easily become fundamental. As a rule, therefore, where the dimensions of an auditorium exceed 50 feet, it is safer to proceed by eliminating the reverberation altogether. It is extremely fortuitous that the extreme dimension to which reverberation can be conveniently utilized corresponds exactly to the extreme distance to which the direct sound of a speaker's voice will readily carry. This coincidence makes it possible to draw a sharp dividing line between those auditoriums which may best be treated by utilizing the effects of reverberation and those where it is desirable to eliminate the reverberation by concentrating the deflected sound upon the rear of the house where the direct sound begins to need reinforcement.

Partnership Agreements for Architects.

BY WILLIAM L. BOWMAN, C.E. LL.B.

ALTHOUGH this might be called the age of corporations, there are certain classes of business where copartnerships are still much favored. This is especially true in professional circles; nor is it to be wondered at, because where professional men join together for their mutual benefit, ordinarily there is not the same amount of capital involved, and thus the chief reason for the use of the corporate form, viz., the restriction of personal liability, does not have the same force and effect. Again, there is a great tendency among many of the States to restrict the powers of corporations, and in practically all, there are requirements necessitating the filing by foreign corporations of papers and the payment of certain fees before they can do business in another State. Further than this, an association of professional men usually calls for and requires much closer personal and social relations than are generally required in the ordinary business world. Even the enumeration of these few benefits and disadvantages show at a glance the reasons for the continued popularity of partnerships among professional men. It is for this reason, and because throughout legal literature it is difficult to find a special form of partnership agreement for architects, that this article, with its proposed agreement has been offered, with the hope that it may be of general aid in the formation of such partnerships in the future.

A partnership, being generally considered a contract relation is, of course created, limited, regulated and terminated, as between the parties themselves, by their articles of agreement; and under the law to-day partners may generally enter into any agreements which are not void as against statutory provisions or public policy. If the express contract does not cover all the duties and obligations as between the parties, then those which are necessary to be determined will ordinarily be implied, and such implication is to be collected and inferred largely from the conduct and general practice of the parties. On this account and because of the vagaries of human nature it is much safer and better in a partnership agreement, as in any other, to express clearly and concisely the various rights, obligations, duties, powers, etc., of the partners, so that there can be no possibility of any differences as to the meaning of the articles or of any words used therein.

Although it is generally assumed that anyone may become a partner, it should be remembered that an infant's contract of partnership is voidable at his option, even though during the continuation of the relationship he would have all of the rights and powers of a partner. Further, at common law it would seem that aliens who are subjects of nations which are at peace with each other may enter into partnership, but upon the breaking out of war between their respective countries the relationship is probably annulled.

No particular formalities are required upon entering into a contract of partnership, but it should be noted that under the Statute of Frauds an agreement to form a partnership in the future, which by its terms could not be, or is not to be performed or begun within one year, or an agreement for a present partnership to continue for more than one year from its commencement, is void if not in writing. In the latter situation the oral contract, when acted upon and business conducted under it, is valid and binding at least during the time the parties were doing business under it.

In most branches of business and in most of the professions, specialization is to-day a *sine qua non* and it is affecting to a large extent the architectural profession. This profession often requires its business manager, its practical builder, its esthetic member, its interior decorator, and in some cases its politician. These various qualities are usually gathered in two or three partners, and the vacancies filled with salaried or commissioned men. Naturally this situation requires some consideration in the partnership articles.

The following agreement is suggested as a basis, which with changes made to suit the number of contracting parties, their general circumstances, local conditions and personal idiosyncrasies, should afford architects an opportunity to enter into partnership knowing exactly what their relations will be. After the important articles will be found short comments regarding the same and other possible or probable forms and changes which such conditions or circumstances may require, with reasons for the selection of the article recommended.

Articles of Partnership.

This Agreement made ....19..,
by and between A. B., of.........................., the
first party, and C. D., of ...., the second party.

Whereas A. B. has for some time carried on the practice, profession and business of architecture, with offices in ....City, State of.......... ...., aforesaid; and

Whereas the said A. B. has agreed to admit the said C. D. into partnership (in consideration of the payment to the said A. B. by the said C. D. of the sum of $..........by way of premium),

Due to the fact that architectural partnerships are usually made by a well-known architect taking into his business some younger and unknown member of the profession, the preceding Whereas clauses cover such a situation. In case both parties have been practicing at different places or in the same places, such facts should be stated in similar clauses; or if a present partnership is admitting a third or fourth partner such facts should be set forth similarly. In other words, the Whereas clauses or preamble should express the present *status quo* and intentions of the contracting parties.

Now This Indenture Witnesseth, That in consideration of the mutual confidence of the said parties (and of the said sum of $.......... to the said A. B. paid by the said C. D. upon the execution of these presents, the receipt of which sum the said A. B. doth hereby acknowledge), they, the said A. B. and C. D., do hereby mutually covenant and agree to become and be partners in the practice, profession and business of architecture, upon and subject to the terms, conditions and stipulations expressed in the following articles:

I. The said A. B. and C. D. shall be partners in said practice as from the ....day of...........19.., during their joint lives (or for a term of............... years), unless the partnership shall be previously terminated under the provisions hereinafter contained.

One of the chief objects in a scheme of partnership to be kept in view is that the capital invested in the profession should remain intact and realizable in the event of dissolution by death or otherwise. In the case of architects the capital is practically synonymous with the good will and professional connection, and it is therefore very undesirable to introduce any article which may seriously affect the value of the good will or either partner's share in it, should it become necessary to liquidate the partnership. Besides this, the commonest objection to a partnership is the danger of disagreements between the partners, and it therefore should be made practicable for either party, at some sacrifice and with reasonable restrictions, to retire from the partnership, should he wish to do so. Bearing these facts in mind, and from general experience, it is to be recommended that the term of the partnership be made during the joint lives, subject to the restrictions which will be mentioned hereafter. In this connection it must be remembered that if both or all partners desire to dissolve they can do so at any time without considering the ways or means afforded by the articles signed.

II. The practice shall be carried on at .... or at such other place or places as may be agreed upon, under the firm name or style of B. & D.

Although ordinarily architectural partners use a firm name containing some or all of the partners' names, care must be taken, if names other than the partners' are used or if the term "& Co." is used, to ascertain what the State statutes are regarding said use. In some States there are penalties connected with the use of certain names or words.

III. The lease, instruments, fixtures, materials, credits, patents, and all the other effects of said A. B , as set forth in the attached schedule marked I., heretofore employed and used by him in connection with his architectural business at the premises No... .... Street, in said City of ...., shall be transferred to the said partnership and be taken by it at an agreed valuation of $...........(or shall be, at the date of the commencement of the partnership, valued by a competent assessor), which sum shall be considered as the amount of capital brought by said A. B. into said partnership. (The said C. D. shall, within one month from the commencement of the partnership, pay to the said A. B. a sum equal to ....of the amount of such valuation, and the said lease and articles shall thereupon become the property of the partnership.)

If the incoming partner pays for his share of the actual assets of the old business under this clause, he must differentiate between this payment and the payment heretofore set forth, which would be for the good will of the profession.

The partner possessing the business will probably have in his offices and in use in the business, certain personal instruments, books, pictures, etc., the ownership of which he will desire to retain. Due to that fact it has always been found expedient and desirable to list in a schedule everything which is to go to the partnership. This schedule must be full and complete, so that no question can ever arise upon this subject, which is quite a common source of trouble and disagreement between the partners. It is suggested that a valuation should be placed upon each article, so that if at any time a partner desires to purchase such article or if either partner should later retire and desire to take some articles with him, such a result could be reached with little or no difficulty on this score.

IV. The capital of the partnership shall be taken to mean and consist of the said lease, fixtures, etc., and effects enumerated in the last article and listed in the attached schedule as stated therein, and such further stock and effects as may from time to time be required for the efficient working of the practice, to be purchased with the consent of both partners, the cost thereof, and also such sums of money as may be, from time to time required, for the firm business, to be borne and contributed by the partners in equal shares (or in the proportions in which they are to share in the profits, as hereinafter mentioned). The capital is to be employed in the business of the partnership and no part thereof is to be drawn out by any of the partners, nor shall firm funds be drawn or used for anything but strictly firm business, without consent of all parties. Said partners shall be at liberty to draw out of the funds of the firm each month for their private expenses the following sums, to wit: A. B. $ ....; C. D. $ ....; but no moneys shall be drawn or paid to either partner without its equivalent share being drawn or paid to the other. The sums so drawn shall be charged against the partners respectively; and if at the annual settlement hereinafter provided for, the profits of any partner do not amount to the sum so drawn out in that year, he shall be charged and must pay interest on the deficiency at the rate of.. per cent per annum from that time until such excess shall be repaid to the said firm (or he shall repay such deficiency with interest at.. per cent at once to the firm).

This article considers one of the most serious problems in partnerships, namely, the power of the partners to deal with the partnership funds. In the ordinary articles it is usually provided that if any partner should overdraw his account he shall be charged interest upon the same. Such a requirement is of little solace to a partner, who finds that the other partner has drawn or is drawing money from the firm and charging himself legal interest when said partner has no funds or prospect of being able to re-pay such sums or borrow except from his share of the future profits of the firm. The writer has in mind an architect's firm where one partner acted as business manager and attended to all of the accounts, etc., while the other attended solely to the architectural end of the business. The managing partner in order to pay unusual personal demands began to borrow money from the firm, at all times keeping the books properly and charging himself with the amounts drawn, and at no time withdrawing more money than the firm could stand. When the yearly accounting was made, it was found that the borrowing partner had almost $10,000 of the firm money, and since he had no personal moneys or income outside of the firm, the other partner found himself in a situation where it was questionable as to when, if ever, he would be able to get and have the use of his share of the borrowed money.

After a careful consideration of all probable means and methods to avoid such a situation, it has seemed best to require absolutely payments to both partners or none at all. If any partner desires to leave such payment in the firm, as part of his accrued profits drawing interest as hereinafter provided, such action would be proper and would not affect the situation in the least.

V. An account shall be opened at the............... Bank, at.................. ....., in the name of the partnership, and within seven days from the commencement of the partnership the said A. B. shall deposit the sum of $.......... and the said C. D. shall deposit the sum of $.......... to such account, which said account shall not, without the consent of both partners, be at any time allowed to be less than $......... All moneys received on account of the partnership by either partner shall be at once deposited to the said partnership account at the bank, and all checks drawn on account of the partnership shall be signed by both partners.

This provision of paying all moneys received into a bank has one indirect advantage, in that, if at any time the partners consider selling the practice, or any part thereof, said deposit would be regarded by the purchaser as valuable independent evidence upon which the premium would be based. Such banking, moreover, would be of great assistance in keeping the accounts of the practice and making the division of profits a simple matter.

The requirement that all checks be signed by both partners is unusual and might in some individual cases cause some inconvenience. Of course such a method would probably be too cumbersome if there were more than two partners. In the architectural profession about the only payments necessary are the salaries, monthly bills for rent, materials, etc., and the payments to partners. This being so, if any partner were to be absent for a short time it would be an easy matter for him to sign the weekly or monthly checks in advance. Experience has shown that the advantages of this requirement greatly outweigh any specific cases of inconvenience, and the protection thus afforded each partner and the firm, is in line with the constant effort in articles of partnership to allay any chances of suspicion between partners, and minimize the opportunities where one partner can act without knowledge and consent of the other. It might also be mentioned as an advantage that in cases of forgery it would be more difficult to forge two signatures than one.

VI. The partners shall be entitled to the net profits of the practice in equal shares (in the following proportions: A. B. .... per cent; C. D. .... per cent), and they shall bear in the same proportion the expenses and losses arising in the said practice.

VII. Both partners shall employ themselves diligently in the said practice, and neither partner shall engage in any other undertaking or business requiring his personal attention; and in the event of either partner holding or obtaining any appointment or making any profit by consultation or as an expert, whether directly in connection with the said practice or otherwise, the net salary or net fees from any such appointment or profit from any such consultation or service as an expert shall be considered as part of the assets of the said partnership. Any unfinished work or business of either party shall be assigned to, and be completed by, the firm as partnership work, subject to the lien of the partner for work already done thereupon. Said lien shall be the proportion of the net profits on said work or business, less payments made, which the amount of time spent by the party bears to the time spent by the partnership in completing the same (or shall be the same proportion of the net profit less payments made, as determined by the percentage of completion done by the party). Neither partner shall accept any personal professional appointment or office without the consent of the other partner.

A partner who has an established business is sometimes desirous of reserving for himself the emoluments of some appointment which he holds, as supervising architect or expert for some City or Board, but it is not reasonable or customary that he should do so. He will argue that this work must be done by him and cannot be deputed to the other partner, but on the other hand it takes time which rightfully belongs to the partnership. In case the partners have uncompleted work still on hand it should be completed by the partnership or by each one personally after the commencement of the partnership as partnership work. The remuneration which should go to the partnership and to the partners, should be in proportion to the services rendered by each, prior to the partnership, with perhaps an additional retainer to the partner who secured the business. This has proved to be one of the simplest and fairest ways of compensation under such circumstances.

VIII. Any legacy or gift not in direct return for professional services rendered, made to either partner exclusively, shall belong to that partner and not to the partnership account.

IX. Each partner shall at all times pay and discharge his private debts and liabilities and shall save the other partner and the partnership effects harmless from all debts and claims on his separate account; and neither partner shall, without the previous consent in writing of the other, become an assignor, endorser, guarantor or surety to or for any other person, or in any way use the firm name or credit, either directly or indirectly, except for firm business.

X. Each partner shall be liable personally to make good any loss occasioned to the partnership by negligence or misconduct on his part or by his failure to conform to these articles of agreement.

This article is bound to cause some hesitation on the part of certain partners, but it is believed that its influence will be very salutary. Of course architects will make mistakes. Whether such acts or omissions as are ordinarily called mistakes amount to negligence is a question to be determined on the facts. It may be argued that either partner may be negligent at various times and that when the losses from such negligence are considered, the firm will have suffered about equally from both partners. It does not seem that this presumption is a fair one, and it is believed that the retention of this clause is most essential.

XI. Such assistants and employees as may from time to time be needed for efficient practice shall be engaged by mutual agreement or consent; and, except in the case of flagrant misconduct, they shall be dismissed similarly.

XII. Each partner shall be just and faithful to the other in all accounts, entries, dealings and transactions relating to the said practice, and shall not use the name of the partnership, or deal with the property thereof, for other purposes than those of the said partnership.

XIII. Regular books of account shall be justly and fully kept of all the business and transactions of the partnership, and each of the partners and their respective attorneys or legal representatives or authorized accountant shall have free access to inspect, examine and copy the same; and quarterly a statement or balance sheet shall be made showing the accounts receivable and payable, etc. On each 31st day of December during the continuance of the partnership, a full particular account in writing shall be made and taken of all the stock in trade, money, assets, credits and things belonging to and owing to said firm, and of all such other matters and things as are customarily comprehended in annual reports, and a just valuation and appraisement shall be made of all particulars included in such account which require and are capable of valuation and appraisement, and the interest of each partner in its capital and effects shall be ascertained and a balance sheet made out and corresponding entries made in its books of account, so that the true condition of the said firm may be thus actually known, to the end that the amount of net profits actually and without contingency earned may be from time to time credited on said books of account to the partners in equal shares (or in the following proportions, viz. to A. . . . per cent; to B. . . . per cent). In arriving at the amounts due upon said balance sheet there shall be charged to the expense account all expenses of the business and all losses and other charges incident to, or necessary to, the carrying on of the business. Either partner shall be at liberty to withdraw from the firm at any time the whole or any part of his share of accrued profits then ascertained and carried on his separate account. Each partner is to be allowed interest at the rate of 5 per cent (4 per cent) per annum upon the amount of accrued profits standing to his credit from time to time at each quarterly accounting on the books of the firm.

If any one partner is to receive an extra compensation as manager, or commission for the securing of business, a provision should be made in the above article for the payment of such moneys and the reduction of the gross profit by such amount in ascertaining the net or dividend profit. This at once raises a very serious question as to whether the partner who secures business should be given as a commission a certain per cent of the resulting net profits in addition to his share of the ordinary profits in the firm. In all professions it has become a custom to grant commissions for the securing of business. While this is necessary with salaried or other employees, it is a serious question whether such a provision is wise as regards partners. If the commissions are large a situation may be created where it would be to the advantage of a partner to seek business rather than attend to the architectural work and to the performance required by the contracts or work secured. Again, if only one partner as business manager is allowed commissions, a source of jealousy and trouble between the partners is created. Careful consideration of the situation and a study of cases where it has been discussed seems to lead to a recommendation that as between the partners no commissions should be paid. They are jointly interested in everything that the partnership does and that joint interest should be sufficient to call forth each partner's best efforts in the particular work or branch of the business entrusted to his care.

If no fixed amount is required to be kept in the bank as provided in Article V., then a provision should be here inserted requiring a fixed amount of capital which should be retained in the business, and which should be considered in determining the net or dividend profits. If a partner is allowed to borrow money by consent of the other partner he should pay legal interest for such money, while he receives under this article only 4 or 5 per cent for moneys left in the partnership. This, however, seems by experience to be sound business policy and much the better practice. If the business is large it may be well to have a semi-annual, rather than an annual accounting as herein provided, but that is a matter to be determined by the particular case.

XIV. If either partner shall desire to determine the partnership during the first year thereof, he shall be at liberty so to do, on giving two months' notice in writing to the other of his intention, and in such case, if A. B. be the partner giving the notice, he shall on the date of the termination of such notice pay to C. D. the sum of $. . . . ; and if C. D. give such notice, A. B. shall at the time last mentioned pay to him the sum of $ . . . . for his share in the practice, and shall at the same time pay to C. D. the value of his share in the capital of the partnership, as hereinbefore defined. And in such case C. D. shall be subject to such restraint upon practicing in or near. . . . . aforesaid, as is contained in Article XXIV. of these presents.

Usually within the first year of their relationship partners ascertain and learn the differences and peculiarities of each other. If everything goes smoothly the first year, the chances are good that the partnership will last. With this in view and in order to still retain the force of Article I., this power of either partner to rescind during the first year of the partnership is granted.

There is serious diversity of opinion as to the sums which should be paid under this article. Some think that within the first year either partner should be allowed to retire, the only requirement being that each partner should as far as possible receive what he has contributed towards the partnership. Others recommend that the condition only works well provided the partner who gives notice to resume the *status quo* makes some considerable sacrifice; for example, if the notice is given by the vendor, A. B., he should pay to the purchaser, C. D., from 10 per cent to 30 per cent above the sum he received from him, whereas if it is given by C. D. he should receive back from 10 per cent to 30 per cent less than he paid, and in either event C. D. should be restrained from continuing to practice in the neighborhood. As has been well stated, it is usually the man who made a bad bargain who desires to withdraw, and why should he be penalized more than he already has been? On the other hand, he could hardly complain that he went into the partnership blindly, or without complete and full knowledge of its terms.

It will be noted that this is the only article granting power to determine the partnership, but if a partner at any time so desires there is no way to prevent his withdrawal, although the terms and conditions of such withdrawal can be settled and determined similarly as they are hereinafter contained in Articles XXII. and XXIII.

XV. The second party, at any time before the termination of the . . . . . . year of the partnership, shall have, on giving to the first party three calendar months' previous notice in writing, the option of purchasing a further share of the business, so that his interest may equal that of the first party. The purchase price for such further share shall be the sum of $. . . . . ., to be paid in cash at the time of the purchase.

This article should only be used in case the purchaser, C. D., buys less than a one-half share, and it is only fair to allow him to purchase up to one-half after two to ten years, according to the circumstances. The purchase price should be based upon the original valuation and not upon the valuation of the partnership practice. This, because an increase in receipts may be due as much or more to the efforts of the purchaser as to those of the old partner. An incoming partner will naturally be anxious to increase his share in the business, while the vendor will just as naturally try to retain as much interest for himself as possible, and thus the latter usually endeavors to put off the time of equal joint association as long as possible. One fair method sometimes employed, which obviates this difficulty, is to give the junior partner the option of increasing his share to one-half at any time after a given number of years, or sooner, if at the end of any year it shall be found that the junior partner has during such years done as much work, as represented by the fees earned, as the senior partner has done.

XVI. Either partner may, on giving to the other six calendar months' previous notice in writing, sell his share in the said practice (at any time after the...... day of.........., 19..). The other partner shall, during the pendency of such notice, be precluded from giving a similar notice on his own behalf, but he shall have the option (to be declared in writing not less than three calendar months before the expiration of the notice) to purchase, as from the date of the expiration of the notice, the share of the partner so retiring for a sum equal to ....the gross annual receipts from such share, as shown by the average for the last three years immediately preceding the expiration of such notice, or since the partnership if less than three years; such sum to be paid in cash at the date of purchase. In the case of the remaining partner declining or failing to declare his option so to purchase, the retiring partner shall be at liberty to sell his own share in the practice and in the capital to a properly qualified man, who shall (but subject to the approval of the remaining partner, which is not to be unreasonably withheld) be admitted to partnership by the remaining partner, subject to obligations and with rights similar to those of the retiring partner at the time of sale. Such purchaser shall execute a proper deed of accession binding him to observe the stipulations and conditions contained in these presents, so far as the same shall be applicable, and such other provisions as may be necessary or proper to effect the intentions herein expressed, and any difference as to the form or contents of such deed may be referred to arbitration. (Provided always that the said A. B. shall not sell his share in the practice until after the expiration of the ...... year of the partnership and C. D. shall not sell his share until after the expiration of the ...... year of the partnership.) And if a new partner be admitted under this clause, the continuing partner shall not be at liberty to sell his share until after the expiration of two years from such admission. If either partner shall die before the expiration of any notice to sell given under this clause, such notice shall be void.

This article changes one of the usual and fundamental rules of partnership by allowing a partner to sell to another person. Subject to the restrictions therein governing such a sale, it is believed that in general the results reached can only be beneficial.

One of the difficult questions which arises, however, is the date at which either party is to be allowed to sell, and naturally this should vary, depending upon whether the one seeking to sell is the old or the new partner. As regards the price at which the remaining partner shall have the option of purchasing, it should be the same rate of purchase as the original purchase price, but based upon the average cash receipts for say three years immediately preceding the retirement. Of course, if the new partner has been taken in by the old partner with a view that the latter could retire at some time in the near future, this article should be changed so as to prevent the new partner from having any power to sell, but instead he should have the right of buying the senior partner out at any time after a fixed number of years.

XVII. In the event of either partner absenting himself from the practice or becoming from any cause incapacitated from performing his fair share of work therein for more than four entire days in any three consecutive calendar months, he shall, if required in writing by the other partner so to do, provide at his own expense a competent qualified person as substitute. Provided always that nothing herein contained shall be taken to imply a right in either partner to absent himself to the neglect of his duties in respect of the practice.

XVIII. In the event of any absence or incapacity of either partner continuing (except with the written consent of the other partner) for more than six consecutive calendar months or for more than 200 days in any two consecutive years, or if either partner shall become lunatic (or if either partner shall commit any breach of the articles herein contained and on his part to be observed and performed, or shall do or suffer anything whereby the interests of the partnership shall be in danger of being seriously injured),,it shall be lawful for the other partner by notice in writing (such notice in the case of breach of these articles or misconduct to be given within fourteen days after the partner giving the notice has knowledge of such breach or misconduct) to determine the partnership, but without prejudice to any remedies of the partner who gives such notice. And if the partnership shall be so determined as aforesaid or by reason of a partner having suffered his share to be charged or of the bankruptcy of a partner, or shall be dissolved by the Court on account of the lunacy, incapacity, absence or misconduct of a partner, then and in every such case the partner through whose lunacy, incapacity, absence, misconduct, bankruptcy or other default the determination or dissolution of the partnership shall have been caused, shall for the purposes of these presents be deemed to be dead as from the date of such determination or dissolution, and his share and interest in the practice as from such date shall (*mutatis mutandis*) be dealt with as hereinafter provided in the event of the death of a partner, the legal personal representatives of a deceased partner being, if necessary, taken to mean and include a surviving partner, or his committee, or trustee, as the case may be. Provided always that in case the dissolution or determination has been caused by the misconduct or breach of one partner the other partner shall not in any event be bound to purchase his share.

This clause deals with several of the serious and difficult questions in partnership, as to what shall be done in cases of lunacy, misconduct or bankruptcy of a partner, and it seems that this provides a satisfactory and fair method of overcoming such difficulties.

XIX. In the event of the partnership being determined by the death of A. B. in the first year of the partnership, C. D. shall purchase (or have the option of purchasing) the share of A. B. for the sum of $...., and if in the second year of the partnership C. D. shall purchase (or have the option of purchasing) such share for the sum of $......, and if in the third year of the partnership C. D. shall purchase (or have the option of purchasing) such share for the sum of $....... In the event of the partnership being determined by the death of C. D. during the first three years of the partnership, A. B. shall purchase (or have the option of purchasing) his share for the sum of $....... If the partnership shall be determined by the death of either partner occurring after the end of the third year of the partnership, the surviving partner shall purchase (or have the option of purchasing) the share of the deceased partner for a sum equal to ....times the average gross annual receipts from such share for the three years last past immediately before the date of the partner's death. (Any option to purchase under this clause shall be declared by the surviving partner within fourteen days after he has knowledge of the death of his partner.)

It will be noted in this article that the survivor is here bound to buy, and experience has shown that this is much better practice than merely granting him an option to buy, because in the latter case the representatives of the deceased are largely at his mercy, for without actually refusing any purchaser whom they may bring forward, he may so deport himself or misrepresent the practice that no one would care to join him in partnership; and he would eventually obtain the share for nothing, or at any rate upon his own terms, although an attempt to remedy this has been made by the latter part of Article XXII. Regarding the fixing of the price to be paid by the survivor, it should, in consequence of the absolute requirement of buying, be made moderate. Due to the fact that these articles are written assuming A. B. to have a fixed practice with a certain clientele, and that the new partner is a younger man starting out, it would seem fair to allow different valuations each year up to and including the third year of the partnership. If, however, the two prospective partners are older architects with about an equal valuation of their individual practice, there will be no difference in the purchase price at these various times. Naturally it is necessary that each case should be considered on its own merits, as circumstances may materially alter the amounts which should be payable in the event of death.

XX. The practice shall become the property of the surviving partner as from the date of his partner's death, subject to the payment from the same date of all outgoings. The surviving partner shall pay the purchase-money in cash within one calendar month of such death unless security approved by the legal personal representatives of the deceased partner shall be given by the surviving partner, in which case the surviving partner shall pay the purchase-money as to one-fourth within one calendar month from his partner's decease and as to the remaining three-fourth parts thereof within six, twelve and eighteen calendar months respectively from such decease, with interest at the rate of 4 per cent per annum on the amount for the time being outstanding.

If the survivor buys, the price not only should be moderate, but the terms of payment should be easy, though they should be so arranged that the executors of the deceased partner should have the best available security that the money would be paid in due course; otherwise it would be possible for the survivor to sell out within a short time after his partner's death and elude payment. If the survivor cannot pay cash or give satisfactory security, then his proper course is to take in another partner, who will provide the necessary capital.

XXI. Any purchase of a share or part of a share of the practice under these presents shall not (unless otherwise specially provided) include any book debts of the partnership or of either partner. And in the event of either partner or any hereafter admitted partner purchasing the share or part of the share in the practice of the other, the purchasing partner shall at the same time purchase a corresponding share in the capital of the partnership (not including book debts) for a sum to be agreed upon or determined by valuation and to be paid in cash at the time of such purchase.

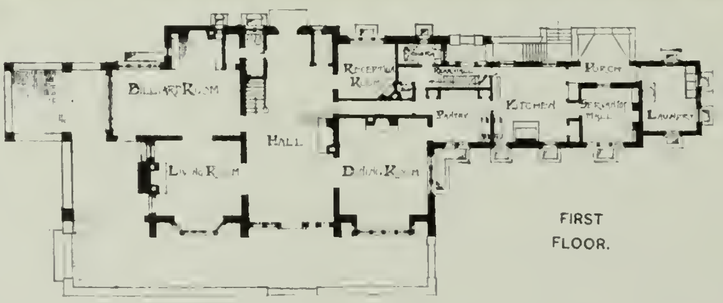
XXII. In case of any dissolution of the partnership (otherwise than by effluxion of time) the surviving or continuing partner shall pay and liquidate all partnership debts and liabilities and shall, in accordance with the customary dealings, get in and collect all book debts of the partnership, and shall render an account thereof quarterly and at the same times pay the share of the outgoing partner therein to him or his representatives, as the case may be.

XXIII. Subject to the provisions of these presents and save as herein otherwise provided, upon the determination of the partnership, a general and final account in writing shall be made and taken of all the moneys, credits, property (other than the good will and connection of the practice), effects, debts and liabilities of the partnership up to the time of the determination thereof, and the said moneys, credits, property and effects, or the proceeds thereof, shall, after discharging or providing for the debts and liabilities of the partnership, be divided between the partners or their representatives in the proportion in which they shall at the date of such determination be entitled to the net profits of the partnership.

XXIV. If the share of either partner in the practice shall be sold or taken over at a valuation under any clause of these presents, the outgoing partner shall not at any time thereafter (or within......years from the date of such sale) exercise or carry on or be directly or indirectly interested in exercising or carrying on, upon his own account or in partnership with or as assistant to any other person, the practice, profession or business of architecture at...................... aforesaid, or at any place within a radius of...... miles therefrom. And should the outgoing partner so practice or assist any other person in practicing within the limits aforesaid, or in any way violate this provision, he shall forthwith pay to the remaining or continuing partner the sum of $ .... (for every month or part of a month during which he shall violate this provision), as ascertained and liquidated damages and not by way of penalty.

This article raised at one time a serious question as to how far you could restrict a person from acting professionally or from carrying on business, but the law now seems to be almost unanimously settled that a person can by agreement preclude himself from doing certain things within a certain territory. In ordinary architectural practice it would seem generally sufficient to restrict the outgoing partner within the city or town in which the partnership has had its principal place of business,

HOUSE AT BRYN MAWR, PA.
DUHRING, OKIE & ZIEGLER, ARCHITECTS.



FIRST FLOOR.

SECOND FLOOR.

PLAN OF STABLE.

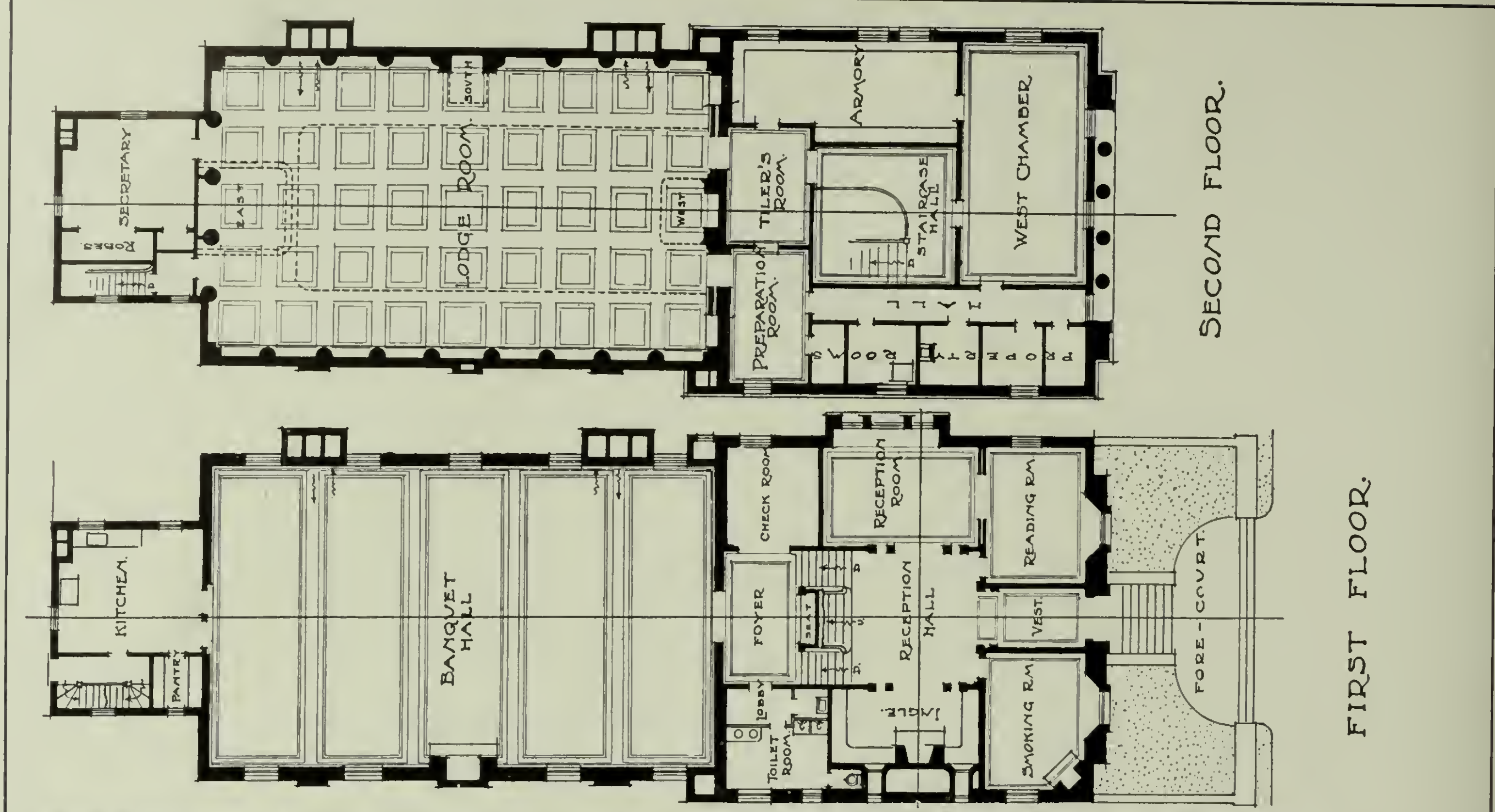
HOUSE AT BRYN MAWR, PA.

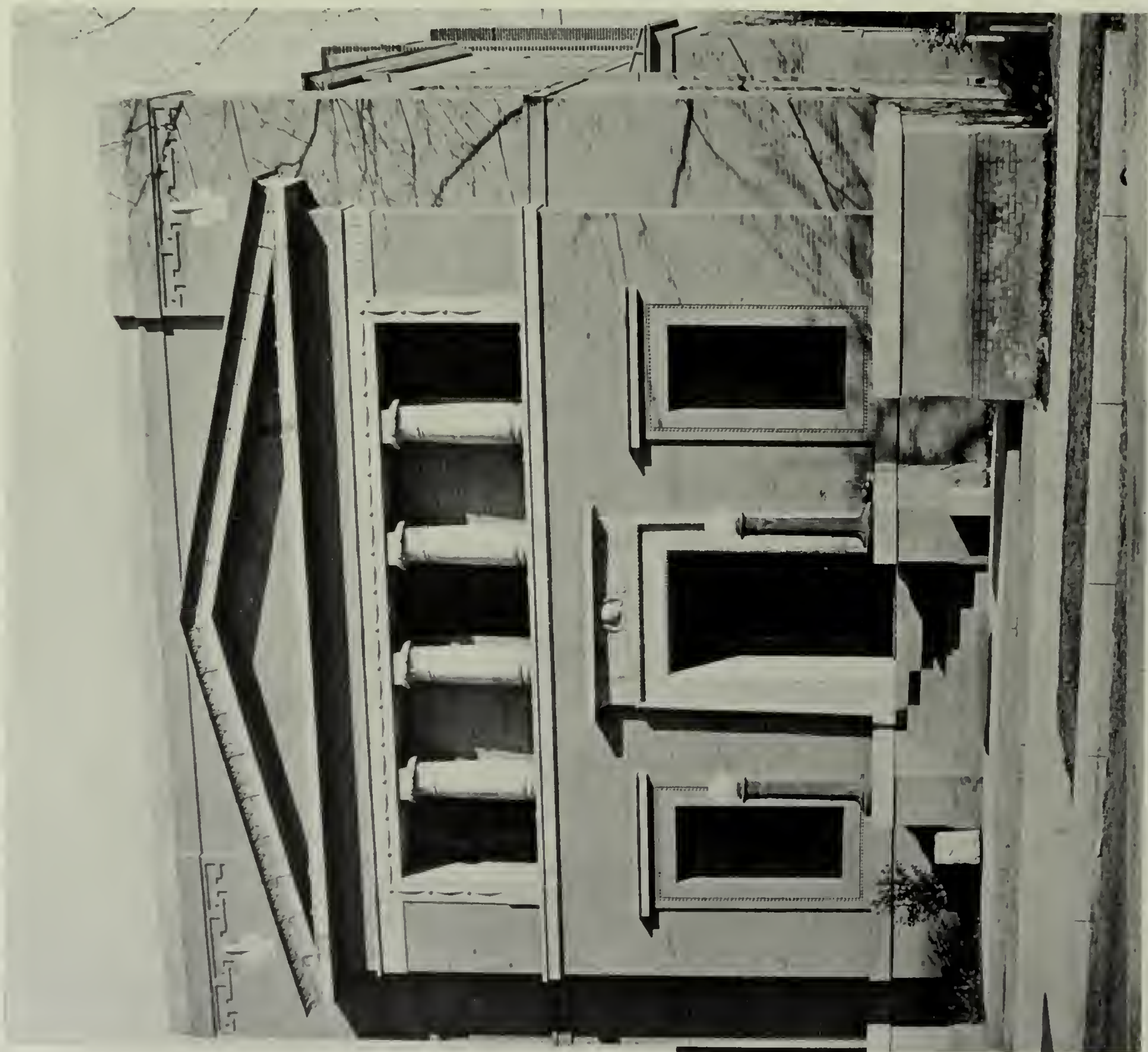
DUHRING, OKIE & ZIEGLER, ARCHITECTS.

INTERIOR VIEWS.

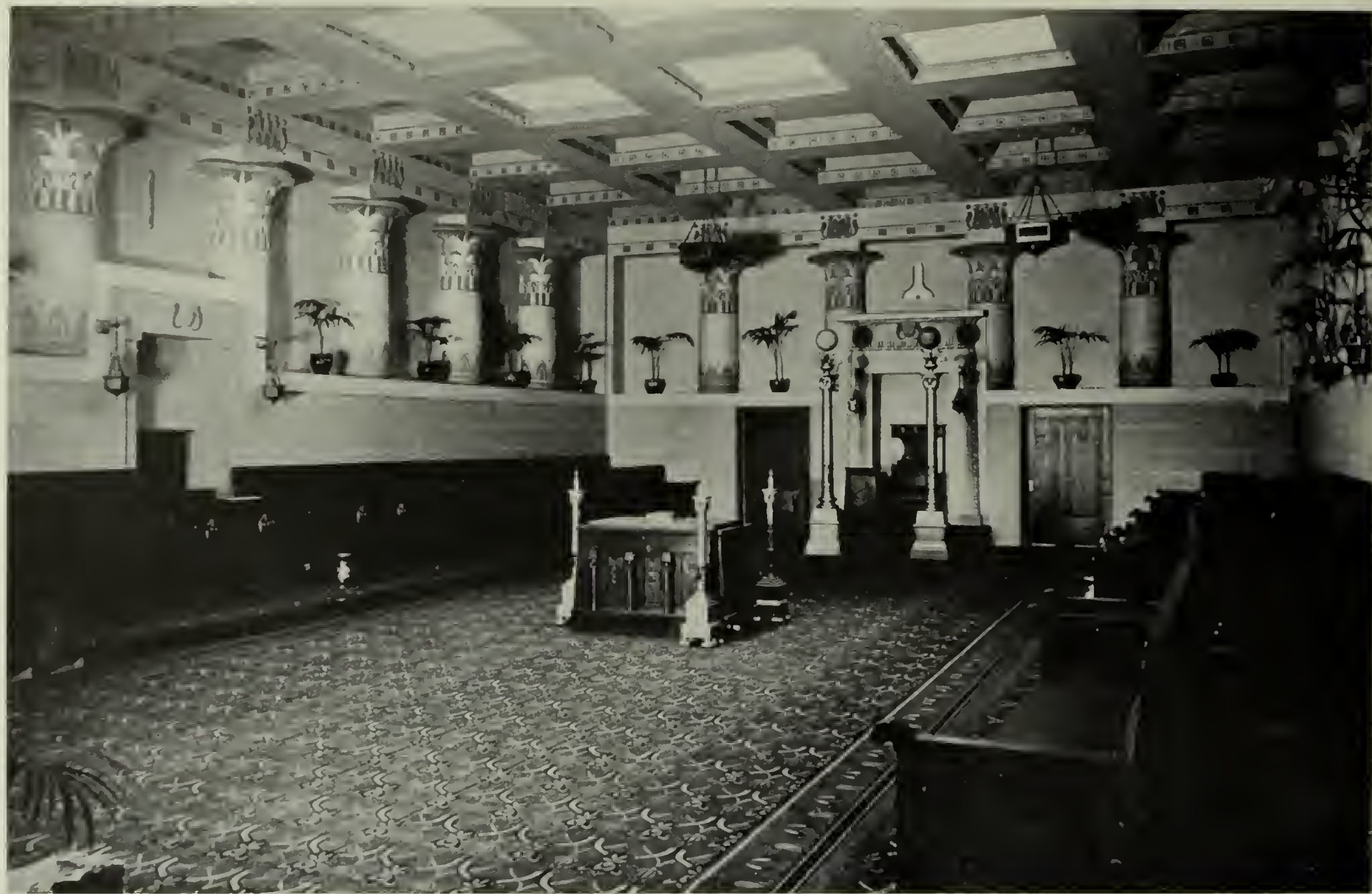
HOUSE AT BRYN MAWR, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS.





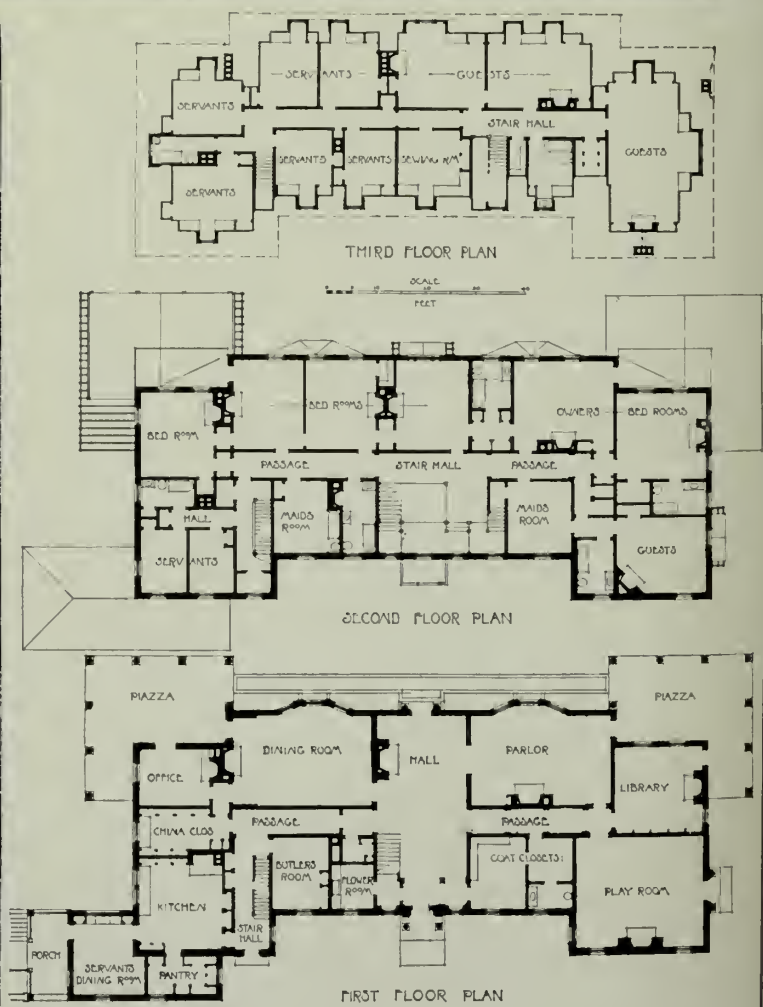
MASONIC TEMPLE, COLORADO SPRINGS, COLO.
MacLaren & Thomas, Architects.



INTERIOR VIEWS.

MASONIC TEMPLE, COLORADO SPRINGS, COLO.

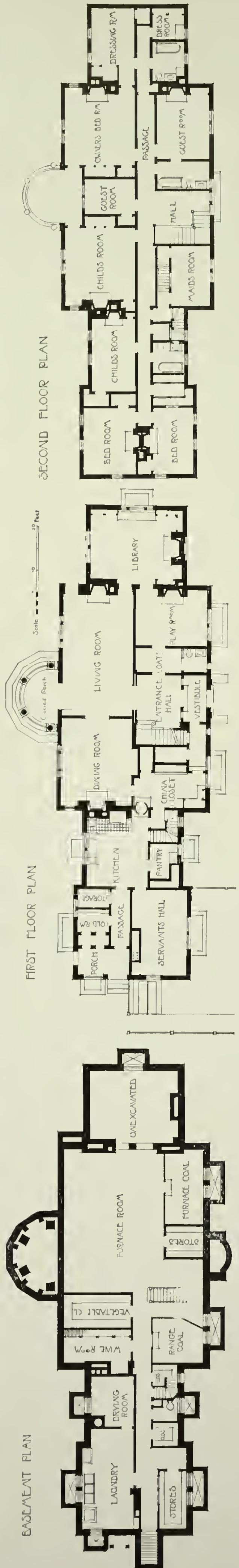
MACLAREN & THOMAS, ARCHITECTS.



HOUSE AT ROWLEY, MASS
WILLIAM G. RANTOUL, ARCHITECT.

HOUSE AT ROWLEY, MASS.
WILLIAM G. RANTOUL, ARCHITECT.

HOUSE AT WESTWOOD, MASS.
PARKER, THOMAS & RICE, ARCHITECTS.



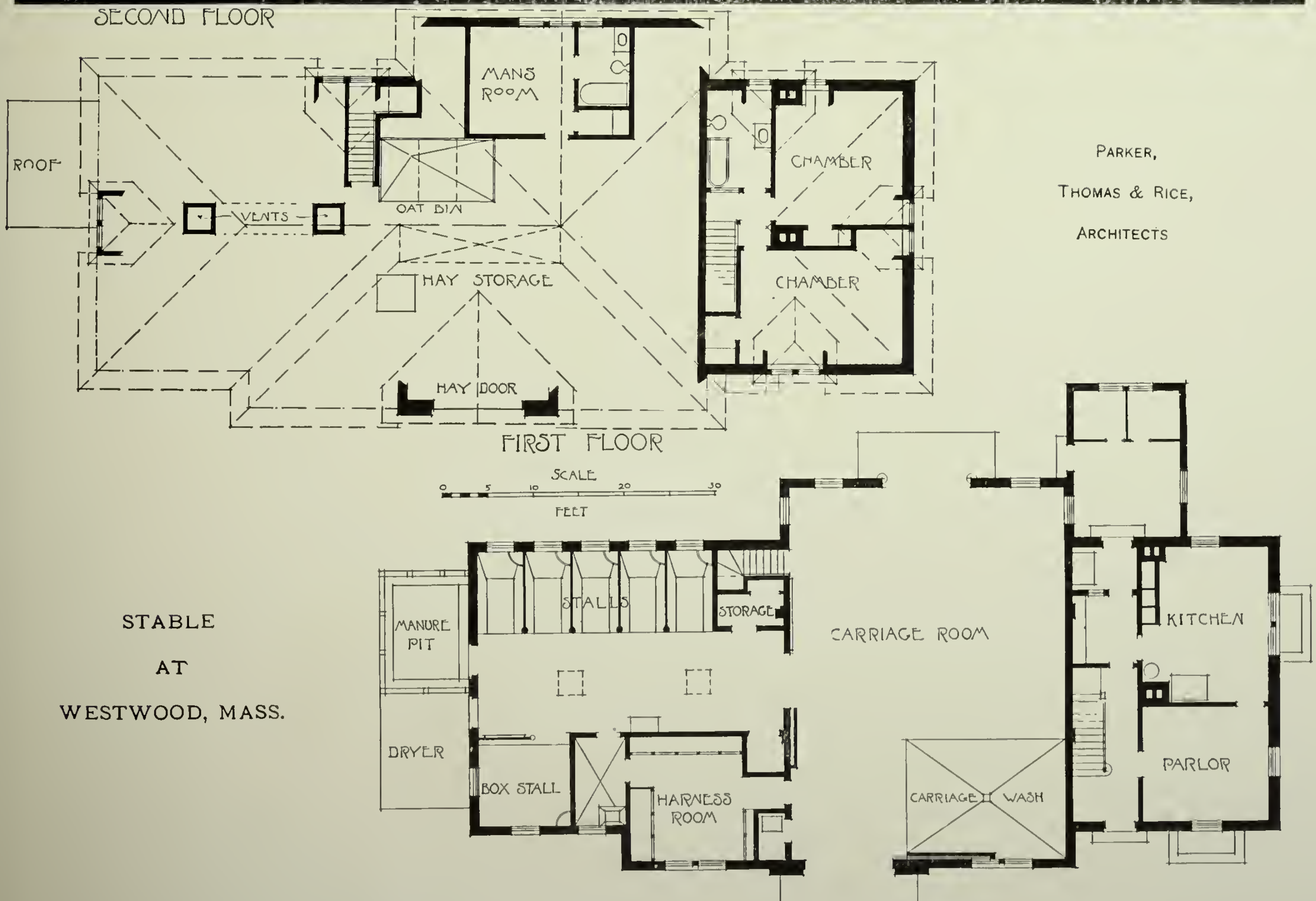
HOUSE AT WESTWOOD, MASS.
PARKER, THOMAS & RICE, ARCHITECTS.

DETAIL OF ENTRANCE.

DETAIL OF PORTICO.

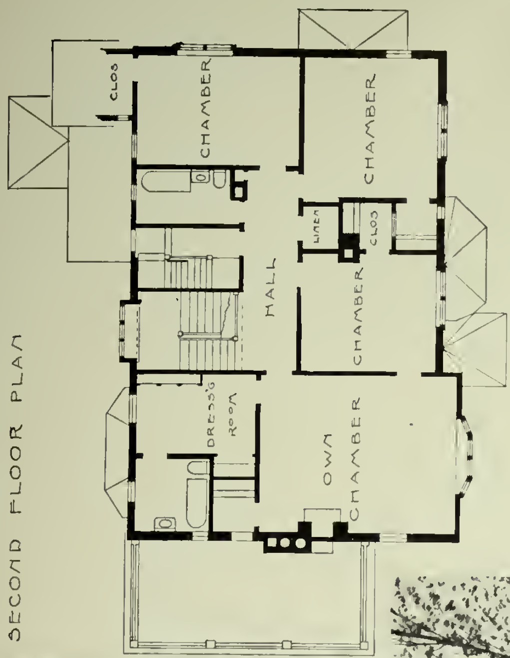
HOUSE AT WESTWOOD, MASS.

PARKER, THOMAS & RICE, ARCHITECTS.



PARKER,
THOMAS & RICE,
ARCHITECTS

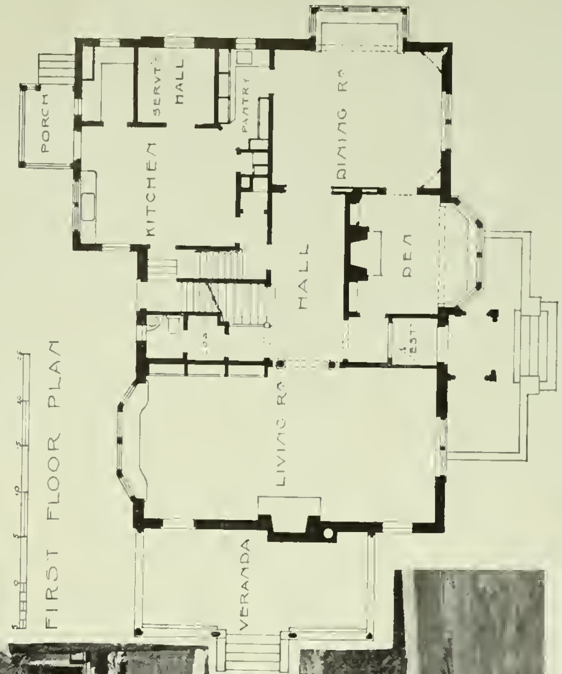
STABLE
AT
WESTWOOD, MASS.



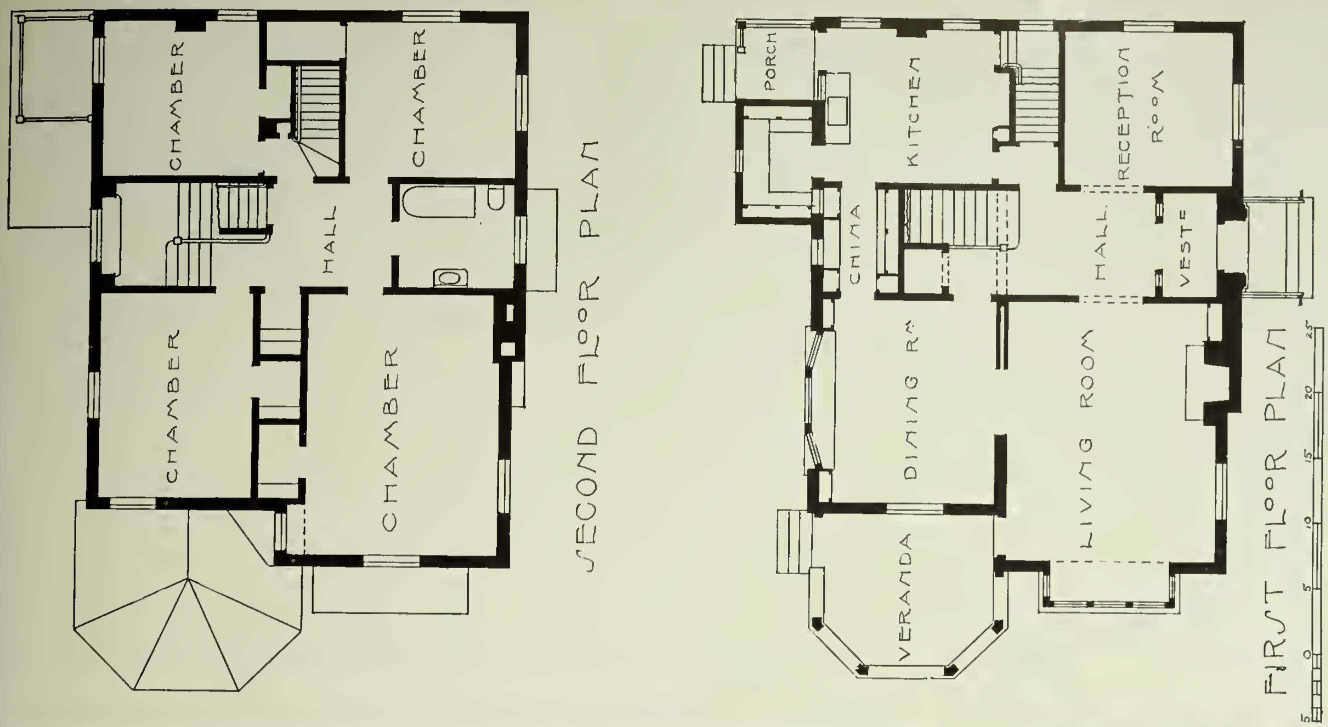
SECOND FLOOR PLAN

HOUSE AT
WALKERVILLE, ONTARIO.

ALBERT KAHN, ARCHITECT,
ERNEST WILBY, ASSOCIATED.



FIRST FLOOR PLAN



HOUSE AT WALKERVILLE, ONTARIO.
ALBERT KAHN, ARCHITECT, ERNEST WILBY, ASSOCIATED.

HOUSE AT WALKERVILLE, ONTARIO
ALBERT KAHN, ARCHITECT, ERNEST WILBY, ASSOCIATED.

although there might be cases where such restriction would need to be enlarged. Such clauses are not especially in favor with the architectural practice to-day on account of the fact that an architect has his personal clients, who will deal with him under all circumstances whether he is alone, in a partnership, or in a corporation. On the other hand, a selling of the business necessarily involves the selling of the good will, which means in turn an introduction of one's own friends and clients upon the theory that the purchaser is capable, and able to take the place of the seller. With this consideration it would seem that there should be no serious objection to such an article.

XXV. Any notice to be given to a partner or his representatives under the provisions of these presents shall be deemed to have been sufficiently given if handed to such partner or addressed to him or to his executors and sent by registered letter to his last known address, or handed or sent to any one of his executors or administrators or his committee or trustee, as the case may be.

XXVI. Either of the parties hereto shall, at the request and at the expense of the other, execute any papers and do any deeds and things reasonably necessary to carry out the provisions of these presents or to render the same more easy of enforcement.

This is a most important article, because notwithstanding how careful the partners are, there are bound to be certain things forgotten during the carrying on of the business or at a time of dissolution or of retirement. One such situation arises where, after dissolution or retirement, it was intended that the continuing partner should have the use of the firm name. Many state statutes require under a severe penalty the consent by the retiring partner, to such use and since such consent should be in writing to be safe, it could be secured pursuant to the requirements of this clause.

XXVII. If during the continuance of the partnership or at any time afterwards, any dispute, difference or question shall arise between the partners or any of their representatives touching the partnership or the accounts or transactions thereof, or the dissolution or winding up thereof, or the construction, meaning or effect of these presents or anything herein contained, or as to any valuation herein provided for, or the rights or liabilities of the partners or their representatives under these presents, or otherwise in relation to the premises, then every such dispute or difference shall be and hereby is referred to the arbitration and final decision of...... ...., or, in the event of his death or unwillingness or inability to act, of....................., or in the event of his death or unwillingness or inability to act, of a person to be appointed on the request of either party by the Secretary for the time being of the American Institute of Architects, and the award of such arbitrator shall be final and binding upon both parties. Upon every or any such reference the costs of and incidental to the reference and award respectively shall be in the discretion of the arbitrator, who may determine the amount thereof or direct the same to be taxed as between the parties, and shall be borne by whom, and to whom and in what manner the same shall be borne and paid.

The above clause affords the usual appeal to arbitration which is so common to-day in all contracts. If the partners entering into partnership live in or near Chicago, it is probable that they will desire to use the arbitration clause provided by the Chicago Architects' Business Association, which provides for the selection of the arbitrator by the President of said Association. This Association apparently has established an arbitration committee, and it seems reasonable that what has been done by the architects in Chicago will be followed by those in other large commercial centers. Any readers who are interested in this question of arbitration and its legal force and effect are referred to the arbitration clauses and discussions in the transactions of the American Society of Civil Engineers, Vol. LXVII., page 438, under the title, Agreements for Building Contracts.

If there are more than two partners, then as regards all questions, differences or disputes between the partners arising in the business, management or regulation, the above article should be changed so as to make the determination of the majority in number of the partners final and conclusive on the others, allowing, however, an arbitration under certain conditions of notice, and providing the differences are serious enough to require such arbitration.

XXVIII. In all cases where building contracts, operations, repairs, etc., are to be done to the satisfaction of B. and D., architects, it is agreed that this shall require the satisfaction only of the partner having said work in charge, whose personal decision shall be final and binding upon the partnership without the consent or approval of the other partner.

This article deals with one of the most serious practical questions raised in architectural partnerships. While the writer doubts its additional legal force, yet it is hoped that it may aid a very troublesome situation. The writer has never seen any such clause and it is, so far as he knows, purely a creation of his own. To-day practically all building agreements in the English language require the work to be done to the satisfaction of the architects. When the architects are a partnership or corporation, the builder finds to his sorrow that in many instances he is trying to serve several masters. This is unfair to him and he should at the outset be appraised as to the exact person and architect or which partner he is to take his directions from, and to whose satisfaction the work must be done. Firms of architects have been known to carry on work under the personal inspection and supervision of a junior partner or hireling and when time for the final inspection has come another partner appears on the scene, condemns materials and work done, much of which may have been furnished or done under express directions; then certificates which are condition precedent to payments are withheld and the contractor is required to do his work over again to please the new architect. Whether this clause will accomplish what it has been designed to do is questionable, but it is felt that it is a step in the right direction, and if it becomes general in architects' partnership agreements and is known by builders to be there, it will relieve much of the present day friction between architects and builders and at the same time will free architectural firms from a usual and often fair criticism of their methods.

IN WITNESS WHEREOF the said A. B. and C. D. have hereunto set their hands and seals the day and year first above written.

.........................(L.S.)

In the presence of

.........................(L.S.)

....

While these proposed articles of agreement make a much longer contract than is customary, yet there are many clauses which have not been considered and which are common and usual in such agreements. The writer calls attention to the following so that prospective partners may have them in mind, i.e., power in the majority of partners to force retirement upon a partner after notice and payment; power to dissolve the partnership at any time with provisions regarding the same; power to introduce sons or relatives into the partnership; power of surviving or continuing partner to sign the firm or partners' name to any necessary papers, etc.; in case an option is given under Article XIX. instead of requiring a purchase, then the representatives of the deceased partner should be given an option to sell the deceased partner's share to a properly qualified person; provisions regarding vacations, etc.

This paper would hardly be complete without some consideration as to the relations of the separate partners with the firm. While most people to-day consider the partnership or firm as a separate entity from the partners, which is proper in the business relations, yet it is strange to note that there are occasions when the individuality of the firm is neglected. Take a specific instance, which is probably one of the most common in all partnerships. The partnership has done certain work to the extent of $1,000 for X., a client of A. B. The latter owes this client money on certain personal debts and desires to offset the personal debts by the partnership account. He thereupon goes to C. D. and says, "I will take over X.'s account and you pay yourself your share of the profits." Assuming that the partners share equally, C. D. thereupon draws a partnership check to himself for $500, and the indebtedness of X. to the firm is canceled. At first blush this situation would seem to be fair between the partners, but as a matter of fact both the firm and C. D. lost on the deal. The firm lost not only the $500 paid to C. D. but the full account of the $1,000, making a total of $1,500, which should have been equally divided between A. B. and C. D., so that under these circumstances A. B. gained $250 and C. D. lost the same amount in the transaction. While such a method of transferring accounts is rather unusual and could hardly happen where there is a regular bookkeeper, yet it has been employed and will be in the future. This is the kind of an advantage which a shrewd partner might take over a careless or unthinking one. Such a situation also shows that the dealings must be made by each partner with the firm and not between the partners to the exclusion of the firm.

In view of the warning and suggestion given in the foregoing paragraph, and although in the business world a partnership is considered as a separate person or entity, it must be borne in mind that the legal situation is exactly the reverse, and that a firm as such, is not regarded as having any legal existence apart from the members composing it. This is the rule at common law, though there are a few state statutes legalizing the business theory.

In conclusion, I desire to impress upon prospective partners that, in accordance with the common law rule, what is called the property of the firm is the property of the individual partners; what are called the debts of the firm are the debts of the partners; and each individual partner is liable to the creditors of the firm for the whole amount of every debt due therefrom, without reference to the proportion of his interest or the nature of the articles of agreement.

Competition for a Small Brick House.

REPORT OF THE JURY OF AWARD.

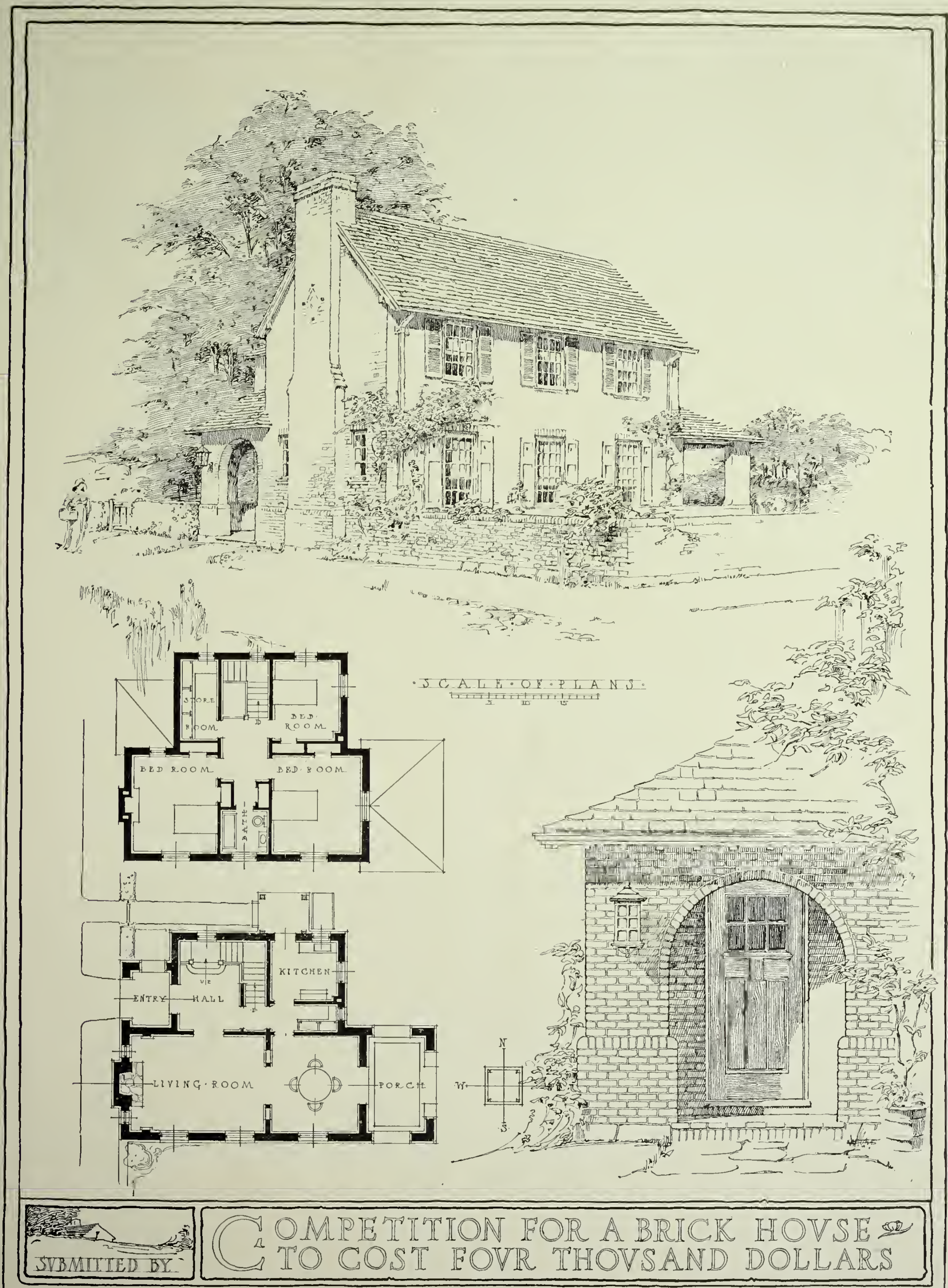
THE mandatory conditions of the program for this competition "A Brick House, the cost not to exceed $4,000.00," necessarily made the problem rather a difficult one if the condition as to cost was to be met, and it was so recognized by the jury who approached their part of the problem in rather a skeptical frame of mind as to the ability of any one to produce a design which should meet this condition and at the same time have the charm and good planning which should be demanded in a competition of this kind. It was recognized by the judges that in the vast majority of competitions for low priced houses held within the past few years apparently no attention had been paid to the condition as to cost, whereas in practice in houses of this class it is a vital factor, a small variation from the limit set being of serious importance to the prospective builder of a moderate cost house.

After consideration $5.00 was agreed upon as a fair price per square foot, though it was recognized as rather low for building in the immediate vicinity of the larger cities. This set a limit of 800 square feet to the allowable area. While this simplified the work of the judges in considering the three hundred and twelve designs submitted, they were disappointed in the large number which were necessarily ruled out of competition; nevertheless it was felt that after this test the best designs remained for further consideration. The problem necessarily demanded great simplicity both in plan and elevation and its solution a careful discrimination as to what should, and what should not be included in a house of this class. The conditions of the program made the plan of secondary consideration; their practicability and general arrangement were however steadily kept in mind.

First Prize. A very able and charming design with good details, a design which would be most interesting if executed. The plan is one of the best arranged and effective of those submitted.

Second Prize. A very simple and characteristic brick design of the Colonial type which would depend for its effectiveness very largely on the texture of brick and method of laying. The cornice is unfortunately weak. The plan however is excellent and the design one, on the whole, which gives the greatest promise of being built within the appropriation.

Third Prize. A simple, straightforward design economical in plan and construction. While the second floor has been sacrificed by the method of roofing the gain in economy is justified by the results on the exterior. The second floor would be improved if there were but one room over the living room — three bed rooms being all



FIRST PRIZE DESIGN.
Submitted by William Boyd, Jr., Pittsburg, Pa.

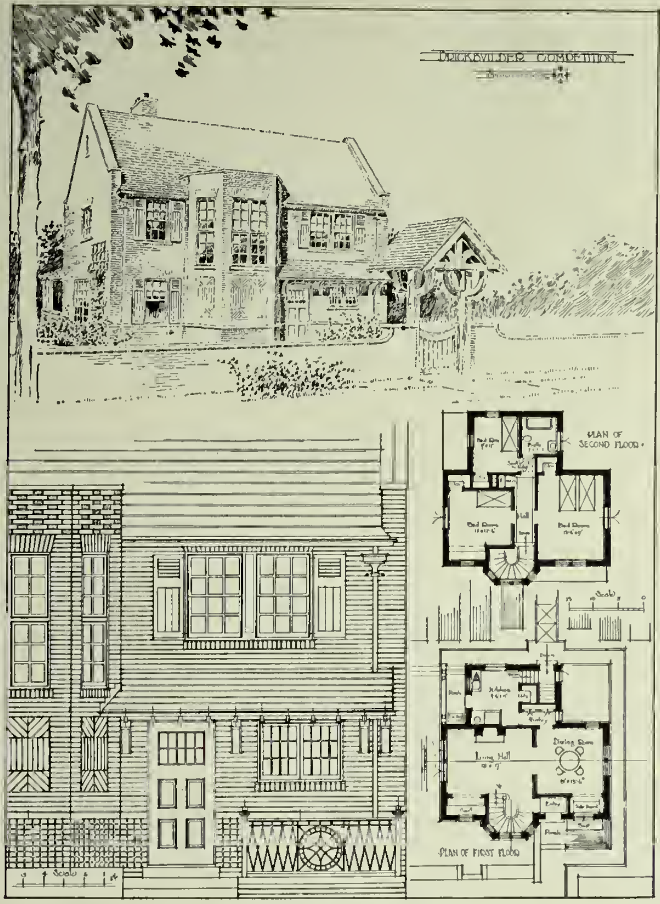
THE BRICKBUILDER COMPETITION FOR A SMALL BRICK HOUSE.

SECOND PRIZE DESIGN. Submitted by Francis D. Bulman, Boston, Mass.

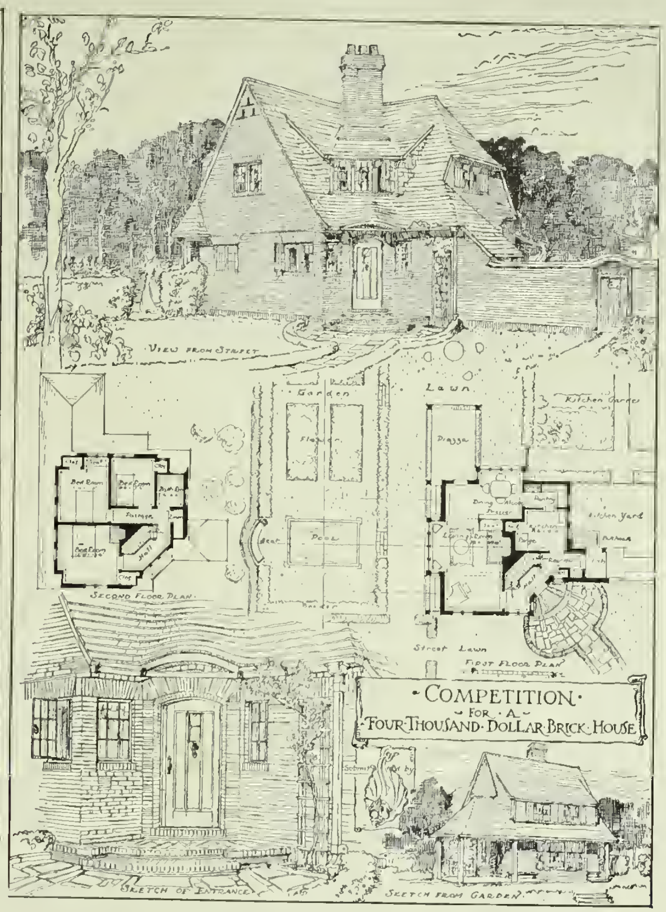
THIRD PRIZE DESIGN.
Submitted by Steward Wagner, New York City.

FOURTH PRIZE DESIGN.
Submitted by A. R. Nadel, Boston, Mass.

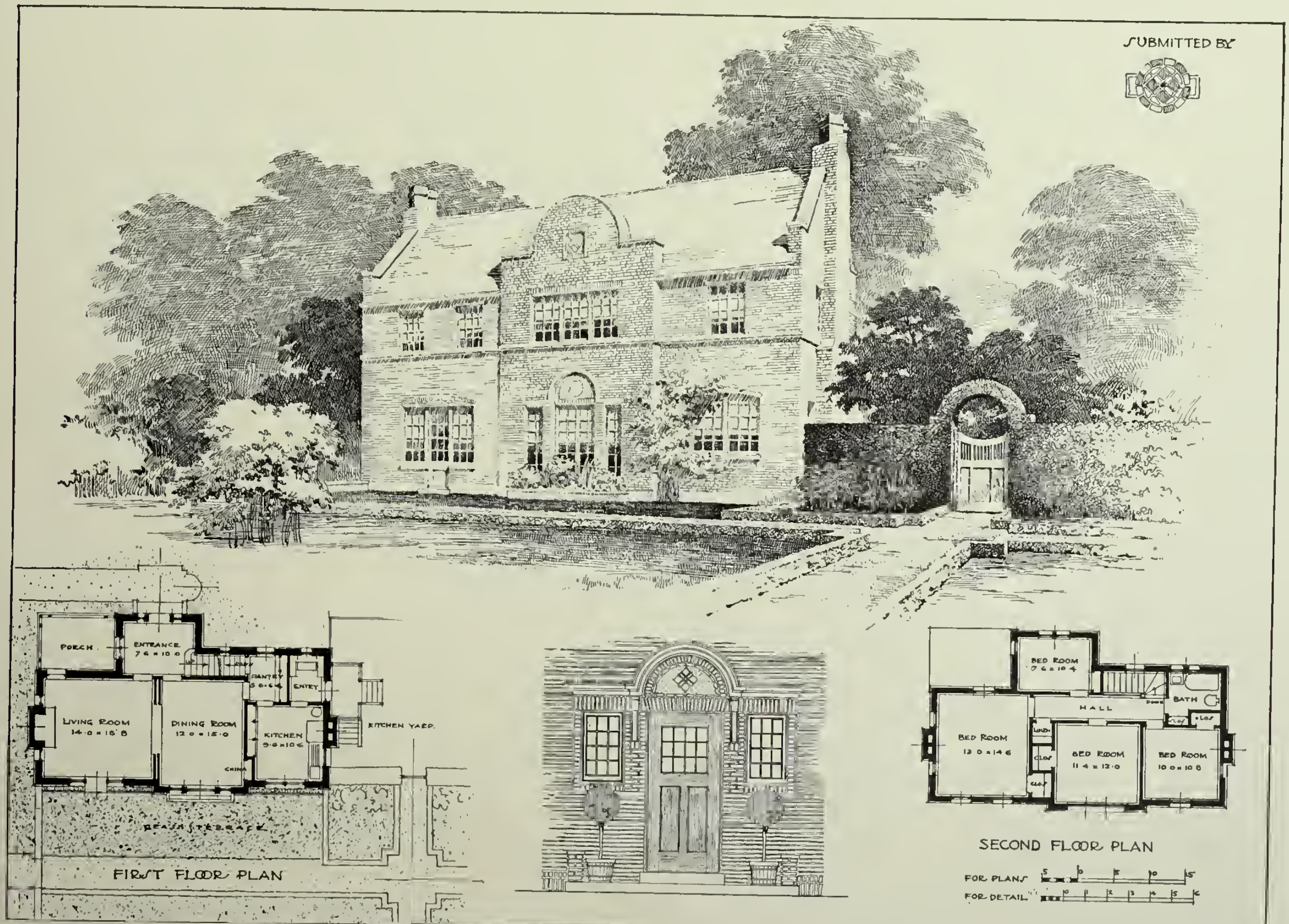
THE BRICKBUILDER COMPETITION FOR A SMALL BRICK HOUSE.



FIRST MENTION DESIGN.
Submitted by C. Edward Arnemann, Weehawken, N. J.

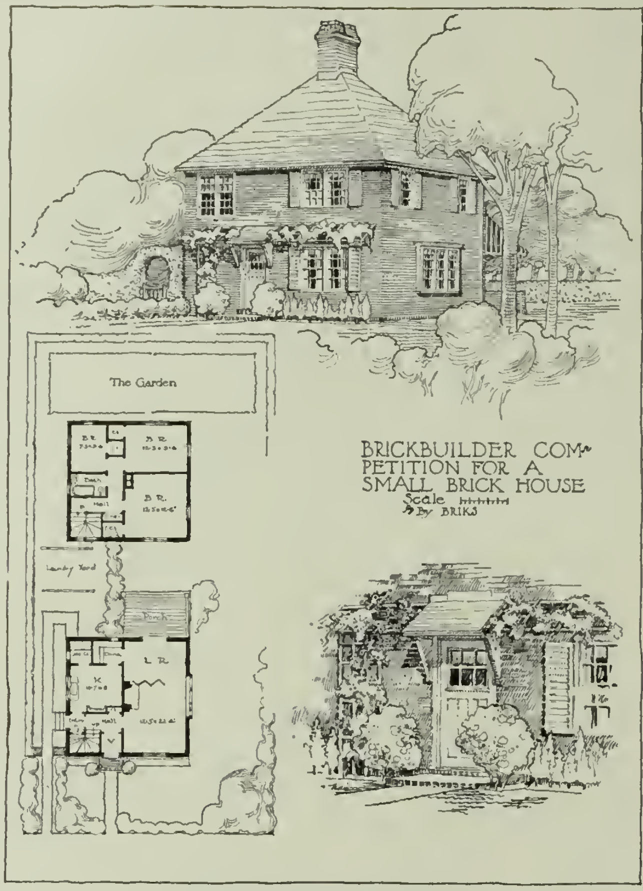


SECOND MENTION DESIGN.
Submitted by D. D. Barnes and W. A. Neate, Boston, Mass.

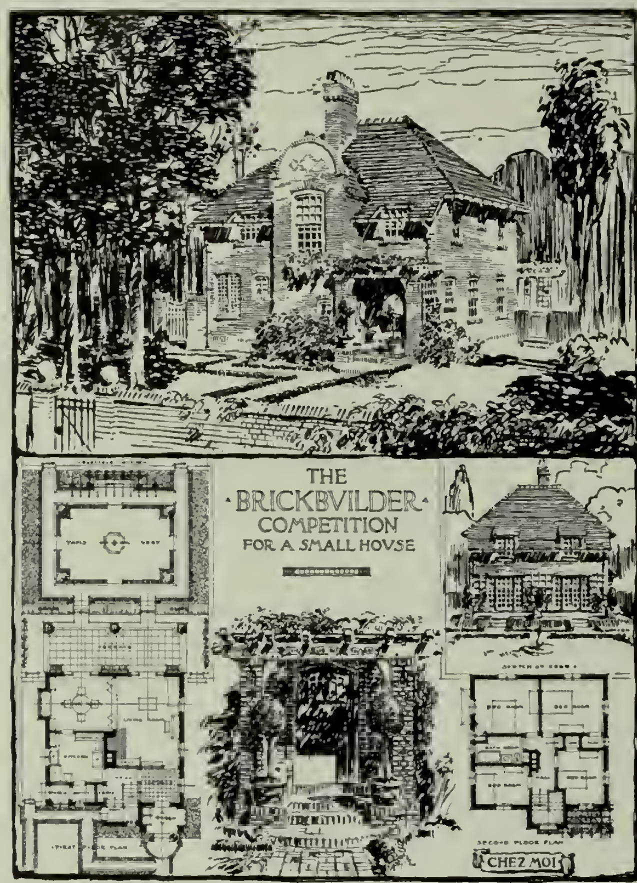


THIRD MENTION DESIGN. Submitted by Charles F. Hogeboom, Brooklyn, N. Y.

THE BRICKBUILDER COMPETITION FOR A SMALL BRICK HOUSE.



FOURTH MENTION DESIGN.
Submitted by Albert G. Hopkins, Boston, Mass.



FIFTH MENTION DESIGN.
Submitted by Charles S. Schneider, Cleveland, Ohio.

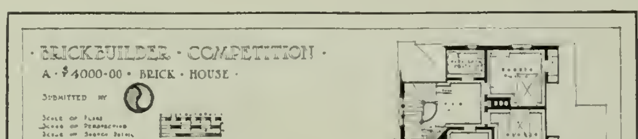
that could reasonably be required in a house of this character.

Fourth Prize. A design rather reminiscent of English work and one which would probably be even more interesting in execution than in the drawing.

First Mention. A good brick design which is injured by the large scale of the openings in the stair bay, while the composition is hurt by the importance given to the entrance gate.

Second Mention. An interesting and unusual plan. The garden elevation is the simpler and the better of the two given.

Third Mention. A very interesting treatment beautifully presented. The details are good but would add materially to the cost of construction.



SIXTH MENTION DESIGN.
Submitted by Howard A. Goodspeed, Boston, Mass.

Fourth Mention. A design which on account of its great simplicity is a good solution of the problem; one which would again depend largely for its effect on the kind of brick work and method of laying.

Fifth Mention. This design was felt to be rather too much broken up and lacking in the simplicity requisite for a house of this class, though interesting in its effect.

Sixth Mention. This design is the most picturesque of all the designs considered. It is, however, hardly fitted to be carried out entirely in brick.

Benno Janssen,
Howard K. Jones,
Frederick A. Russell,
Frank E. Rutan,
Albert H. Spahr,
Jury of Award.

Editorial Comment and Miscellany.

MASONIC TEMPLE, COLORADO SPRINGS, COLORADO, Plates 90, 91.

AN EGYPTIAN character has been observed throughout this entire building. The external walls are treated in buff brick, with trimmings of terra cotta, the color of which is brought into harmony with the tone of the brick. The interior of the lodge room is executed in plaster with a general tone corresponding to that of weathered Caen stone. The capitals of the columns together with the other enriching details are picked out in the characteristic colors of Egyptian work as exemplified in former records of this style which have been carefully studied. In the center of the east wall is an oil painting representing a restored version of the Temple of Luxor at sunrise. The first and second floor plans indicate clearly the accommodations provided. The building cost $7.44 per square foot of area covered, and 17½ cents per cubic foot. The photos used in illustrating this Temple have been copyrighted by the Colorado Springs Masonic Building Society.

PEDIMENT OF MADISON SQUARE PRESBYTERIAN CHURCH, NEW YORK CITY.
Showing new panel executed in polychrome terra cotta by the Atlantic Terra Cotta Company.

THE IMPROVEMENT OF WIDE STREETS IN SALT LAKE CITY.

THE standard width of residence streets in Salt Lake City is 132 feet from lot line to lot line, and 60 to 92 feet from curb to curb. As a result, the cost of paving in the usual manner is an excessive burden on the abutting property. The volume and character of traffic in the residence sections also is such that there is no need for the width of pavement provided when the space between the curb lines is entirely improved. To meet this situation, Mr. L. C. Kelsey, formerly City Engineer of Salt Lake City, adopted a scheme for dividing the residence streets into two roadways with a parked space at the middle. The two roadways are connected every 200 feet.

The roadways are each 24 feet wide and are sloped from the parked space toward the curb and gutter along both sides of the street. The parked space along the center is retained by a continuous curb, extending 6 inches above the surface of the pavement. The space between the two parallel curbs along the sides of the parking is filled to the top of these curbs and carefully maintained as a lawn. The cost of this maintenance is borne partially by the property owners along the street improved and partially by the city.

In all, eight blocks of residence streets have been improved in this manner during the last three or four years. The appearance of the streets on which the parking has been placed is so greatly improved as to enhance considerably the abutting property. The latter bears the expense of the improvement, except at the street intersections, which are paid for by the city. — *Engineering Record.*

CLEANING BRICK FRONTS.

AN EXPERT in the sand-blasting trade who has operated on many buildings, on being asked as to the efficiency of the sand-blast upon soiled brickwork, said that he could not advise it except when the brick were extremely hard. When used against stone the blast does not remove the original face, he said, "only the grime." But in the case of brick, not extremely hard, the result might be different.

The force with which sharp sand can be driven through a fine nozzle is very great. If permitted it would quickly cut a stone in two. In the case of granite, marble and cut stone the skilful operator preserves the original face of the block, but he cannot guarantee to do so with respect to all sorts of front brick. He advises cleaning front brick with acid instead of sand-blasting. The same opinion seems to be held abroad. The cleaning of brick fronts was the interesting subject of a paper recently read before the German Association of Brick and Terra Cotta Manufacturers. The author protested against the use of sand-blast or other method by which the original face of the brick would be taken away, saying:

"When the blast is used, and the face of the brick taken off, the cleaned front will show a good appearance only for a short time, as the brick with the original face removed will be very much more porous than before, and absorb dirt more readily. The use of steel brushes is also very bad, and will not give a first-class job. The best method is cleaning the brick fronts with a solution of muriatic acid. The strength of the solution can be made to 1 in 12. When this solution is too strong for the brick, acetic acid should be used. A good soap solution will, as a rule, take off all thick dirt, and the cleaning with acid solution can then be done easily."

DETAIL BY HOPPIN & KOEN, ARCHITECTS.
New Jersey Terra Cotta Company, Makers.

DES MOINES has been carrying insurance upon its school buildings at a premium cost of about $5,000 per year for a period of ten years. Within this time the fire losses to the companies have been but $1,400. Meantime the school buildings have been greatly improved in the matter of protection against fire. The school board has just been considering the advisability of abandoning the private companies and having the city itself assume the risk. Many of the largest property owners favored this course; but the board voted three to two in favor of continuing the insurance to the amount of forty per cent of the appraised value of the buildings. The minority favored abandonment of all insurance without compromise, and they have on their side the principle which is the buttress of the insurance business. A fire insurance company is but an association of persons maintained to distribute among all of them the chance losses to which all are exposed, but which actually fall upon a few; and so a city, carrying its own insurance on public buildings, is virtually an association for distributing among all citizens the chance losses caused by fire of a comparatively small fraction of their common property.

THE RECONSTRUCTION OF THE ERECHTHEION.

WITHIN the last few years a partial reconstruction of the Erechtheion, on the Acropolis at Athens, has been in progress. An elaborate study of the stones strewn around the building, a sorting-out of them, and the replacement of them, one by one, in the walls of the fabric, has produced an astonishing result. It has rendered necessary a considerable readjustment of previous conceptions with regard to the original form and character of the Erechtheion.

The technical direction of the reconstruction has been in the hands of M. Balanos, the architect and engineer attached to the Ministry of Education. The north portico has been restored, the west wall built up, and the celebrated caryatid porch on the south front renovated. The original cornice and architrave blocks of the south porch have been restored, as well as fragments of the podium, while, of the caryatid figures, the one next the entrance is chiefly a restoration, in marble, made in 1846, when the portico was in danger of falling, and another is a terra-cotta copy intended to replace the one removed in 1804. — *The Architectural Review*, London.

DETAIL OF CORNER ENTRANCE TO BANK BUILDING.
Northwestern Terra Cotta Company, Makers.
Diboll, Owen & Goldstein, Architects.

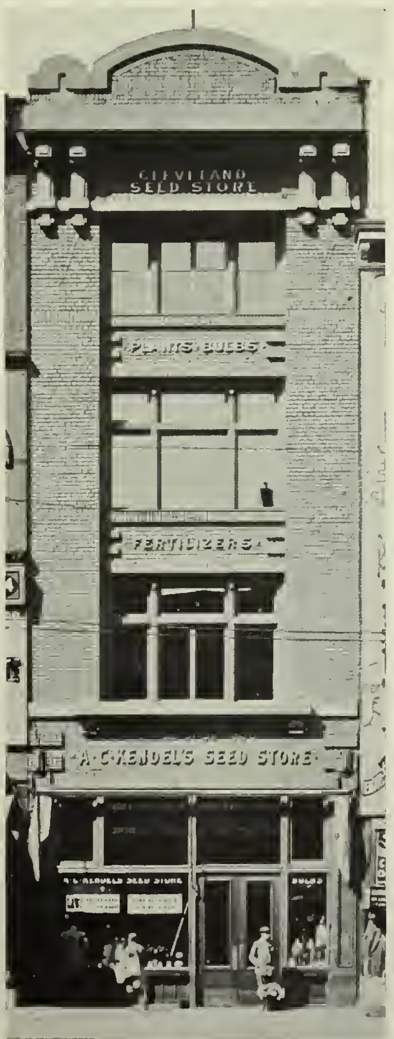
ONE of the novel features included in the splendid array of Japanese exhibits that will be seen this year at the White City, London (Eng.), famous exposition center, will be an immense model of the entire city of Osaka, the Venice of Japan, which will contain the tiny reproductions of some 300,000 houses and hundreds of bridges, and a model of the beautiful temple in Shiba Park, Tokio.

ENTRANCE TO CLEVELAND BASEBALL PARK, CLEVELAND, OHIO.
Watterson & Schneider, Architects.

THE oldest temple in the world, so far discovered, says an exchange, has been unearthed by excavators at Bisya, in central Babylonia. The walls of the tower were first uncovered and the summit cleared. The first inscription on the surface was on a brick stamped with the name Dungi, which goes back to 2750 B.C. A little lower appeared a crumbled piece of gold with the name Param Sim, who lived in 3770 B.C. Just below were large square bricks peculiar to the reign of Sargon, 3800 B.C., who was probably the first Semitic king of Babylon. A large platform was discovered 2½ yards below the surface, which was constructed of peculiar convex bricks such as were used in building 4500 B.C.

THE VENICE CAMPANILE.

IT WAS hoped that the old Campanile of St. Mark's at Venice, which collapsed on July 14, 1902, after an existence of 1,014 years, would have been completely replaced by Easter of the present year. There was, however, no possibility of the work being finished at that time, but it is confidently expected that the bell of St. Marco will again ring out on St. Mark's Day, April 25, 1911. The intention is to reproduce the old tower as faithfully as possible, and with that object in view the bricks, of which there are about one million, have been specially selected and laid. The bricks are each 12 inches long, 6 inches wide, and 3 inches deep. The clay is twice mixed to secure homogeneity. These bricks contain salt, which threatens to turn the tower white. An outcry was raised, and the work was suspended while an inquiry was held. It was found that by prolonged soaking in water the salt was removed. The shaft which was completed four months ago, is composed of an inner and an outer shaft, between which mounts the inclined plane which leads to the bell chamber. The walls of the outer shaft are 6 feet thick. The inclined plane is lit by 36 windows. In the new tower the shafts are bound together by iron rods, and the pilasters at the angles of the inner shaft are similarly united.



STORE BUILDING, CLEVELAND, OHIO.
Bohnard & Parsson, Architects.

BUILDING OPERATIONS FOR JUNE.

OFFICIAL reports from forty-five cities throughout the country compiled by *The American Contractor*, New York, show a gain of 2 per cent in the aggregate, in building operations as compared with June, 1909. Seventeen cities show a loss of from 1 to 64 per cent, and twenty-eight show a gain of from 2 to 264 per cent. The cities scoring a gain of 50 per cent or over are: Atlanta, 67; Birmingham, 54; Cincinnati, 61; Denver, 67; Detroit, 109; Hartford, 115; Little Rock, 118; Manchester, 63; Memphis, 70; New Haven, 169; Oklahoma City, 264; Portland, Ore., 83; Scranton, 72; Syracuse, 53.

A GOOD WORD FOR BRICKS.

IN UNCOVERING the fine stone bridge over the moat at Hampton Court Palace, England, some interesting discoveries have been made. In the wall of the north wing two large archways have been revealed, evidently designed to bring the water into the moat; and on the south side have been found some curious brick steps leading by an archway into the moat from a subterranean way. There is much which points to the waters of the moat having been utilized to flush the vast system of arterial drainage which was one of the main features of this palace. The brickwork of both the moat wall and the main building, though buried for two hundred years, has mostly been found in as satisfactory a state as the stonework of the bridge. Where it was otherwise, it has been carefully patched with the old Tudor bricks. Tens of thousands of these — unrivaled for their texture and their varied tones of rich color, extending from dark purples and crimsons to bright rose — have been collected from the *débris* and put aside for the restoration.

HIGH SCHOOL, WATERTOWN, N. Y.
The round and square columns are built of brick. Brick furnished by the Iron-clay Brick Company.
J. W. Griffin, Architect.

THE NEW PEDIMENT PANEL IN DR. PARKHURST'S MADISON SQUARE CHURCH.

OVERSHADOWED by the highest office building in the world, surrounded by modern skyscrapers, situated near one of the busiest, most varied, and interesting districts in New York, one cannot fail to notice and consider the Madison Square Church.

Undoubtedly, in designing this church, the architects, McKim, Mead and White, deliberately set out to make it fitting and harmonious for a church, yet unique enough to command attention in a commercial district, rather than to fade insignificantly into the background by conforming strictly to convention.

The difficulties of the problem were enhanced doubly by the facts that size must be insignificant in comparision with the buildings which were, or would be, erected in the immediate vicinity, and that open space to set off the church by contrast was entirely lacking. Brilliance and variety of color, combined with unique design, solved the problem.

Polychrome Terra Cotta was immediately chosen for all the colored features, with the exception of the green marble columns. It was, in fact, the only material in which the desired result could be obtained in a lasting, artistic, solid — but not too massive — way. Terra cotta admitted the defining of various members of ornament in different colors on one piece and so maintained the solid impression necessary in a structural material. Paint, of course, was out of the question. Colored stone or marble was impracticable because the natural colors do not occur with enough tone and life, and combining the colors would necessitate very small pieces and consequently an undesirable mosaic effect.

DETAIL BY CROW, LEWIS & WICKENHOEFER, ARCHITECTS.
Made by Conkling-Armstrong Terra Cotta Company.

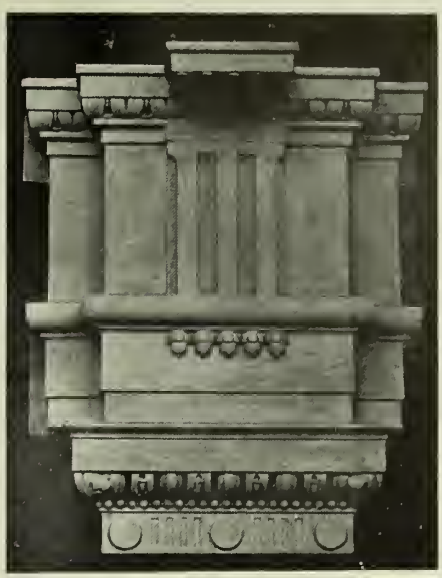
The use of Architectural Terra Cotta was in no sense an experiment, but it was the first important instance of the use of Polychrome Terra Cotta in this country. In fact, colored faience had been practically a lost art since the days of the Della Robbias and was just beginning to be revived at the time the church was erected. For that reason, what to-day seems an excess of caution, was used. The colors were not applied boldly enough, and cut up and divided by the ornament gave from any distance but little more effect than monotone. Fortunately, the dominant feature, the pediment, was left a blank wall until this spring, when the rapid development of Polychrome Terra Cotta — given its first impetus by its use on the minor members of the church — enabled the architects to use it for the pediment in what was undoubtedly the ideal way. The result is that the whole scheme is unified and emphasized and the building has attained a distinct and distinctive character — unique, but ecclesiastic.

WOODLAWN CHURCH, CHICAGO, ILL.
Roofed with German tile made by the Ludowici-Celadon Company.
Arthur Peabody, Architect.

Worship at the Shrine of Truth is the subject of the sculptured panel. The central feature is naturally the universal Christian symbol, the Cross, in gold. Worship is typified by the angels on either side, one bearing a lyre and the other a scroll with the inscription, "*Gloria in Excelsis Deo.*" The allegory is completed by the kneeling figures, symbolizing the Church as a Shepherd and the Church Militant.

The design is by Harry Siddons Mowbray and the modeling by Adolph A. Weinman. The figures are in bold relief, dull white against a background of light blue. The effect is brightened by a light Sienna background for the cross. The cross itself, and the stars, are in gold leaf; the white, blue, and Sienna are the terra cotta glazes and slips.

Altogether, the result is interesting and attractive — a decided relief to the American eye, too used to dull monotony in architecture.



DETAIL BY FRANKLIN & AYRES, ARCHITECTS.
South Amboy Terra Cotta Company, Makers.

JOHN H. PRAY & SONS CO., of Boston have just completed tests to determine the action of acids upon linoleum.

The increasing interest and use of linoleum as floor covering on cement foundation, render the results of these tests interesting in connection with buildings for laboratories, medical institutions, etc.

A strip of linoleum was submitted to the action of the following acids, both concentrated and dilute: Nitric, HNO_3, sulphuric, H_2SO_4, hydrochloric, HCL, Acetic and aqua requa, a combination of nitric and HCL. The acids were left on between one and a half and two hours, and then washed off. In all instances the effect appeared to be entirely on the surface, and in some instances hardly without discoloration.

Three samples were then submitted to an acid bath of *seventy-two* hours in three different acids. In one case only, that of nitric acid, was the fabric eaten.

They also have under way tests of the product of a number of manufacturers, to discover the compound which will give the maximum of wearing value with the minimum of stretch. Some of the linoleums that are now on the market, while apparently up to standard in thickness and density, even when laid by most approved methods and skilled workmen, continue to stretch. This is an important feature, and one deserving the attention of architects and builders.

IN GENERAL.

Twenty-eight sets of drawings submitted in competition for the Oakland, Cal., City Hall were exhibited during the month under the auspices of the San Francisco Architectural Club in the Mechanics Institute Building at San Francisco. The following awards were made in the competition:

First prize design, Palmer & Hornbostel, New York City; honorary prize, Cass Gilbert, New York City; second prize designs, Bakewell & Brown, San Francisco; Arnold W. Brunner, New York City; Delano & Aldrich, New York City; J. H. Freedlander, New York City; George W. Kelham, San Francisco; H. Van Buren Magonigle, New York City; Frederick H. Meyer, San Francisco; Rankin, Kellogg & Crane, Philadelphia; Ward & Blohme, San Francisco; York & Sawyer, New York City.

Members of the Philadelphia Chapter A. I. A., T Square Club, and the Southern Pennsylvania Chapter held its annual outing during June at Princeton, N. J., the especial object being an inspection of the new work which is being carried on at the University. Mr. Frank Miles Day accompanied the party and explained the work in progress and proposed.

The Annual Report of the Schoolhouse Department for the City of Boston for the year ending February 1, 1910, has just been published.

The Year Book of the Rhode Island Chapter of the American Institute of Architects which is just at hand contains a large number of illustrations of new work which has been executed by the architects of Providence, R. I.

DETAIL BY A. B. GROVES, ARCHITECT.
Made by the Winkle Terra Cotta Company.

Peuckert & Wunder, architects and engineers, are successors to the firm of Kurt W. Peuckert, offices 310 Chestnut street, Philadelphia, Pa.

J. Flood Walker and H. A. Reuter have associated for the practice of architecture, with offices in the Frost Building, San Antonio, Texas.

Will S. Aldrich, a graduate of Massachusetts Institute of Technology, and winner of the Rotch Traveling Scholarship and also for a number of years connected with McKim, Mead & White has formed a partnership with E. J. Eckel, F. A. I. A., and George R. Eckel of St. Joseph, Mo., under the firm name of Eckel & Aldrich. The firm has taken offices in the Corby-Forsee Building.

The Atlantic Terra Cotta Company will furnish the architectural terra cotta for the following new buildings: Parochial School and Convent, Brooklyn, N. Y., George H. Streeton, architect; Station for the Philadelphia and

MAIN ENTRANCE TO DEMAREST BUILDING, NEW YORK CITY.
Executed in cream white terra cotta by New York Architectural Terra Cotta Company.
F. H. Kimball, Architect.

Reading Railroad, Columbia avenue, Philadelphia, William Hunter, architect; a large amount of polychrome terra cotta for the new High School Building at Norfolk, Va., Neff & Thompson, architects; Engineering Building for the University of Cincinnati, Garber & Woodward and Tietig & Lee, associated, architects.

The Western Brick Company of Danville, Ill., has purchased the plant of the Selby Brick Works at Danville, and will remodel the plant for the especial purpose of making dark colored, medium priced facing brick with glazed and matt-finish.

A series of waterproofing tests covering a period of several years have been made on the North German-Lloyd docks at Hoboken, and of all the materials used in the experiments Cabot's Waterproofing compound was found to be the most efficient. Work has now begun upon waterproofing all of the brickwork with Cabot's material.

Gladding, McBean & Co., San Francisco, have just issued an unusually attractive catalogue, illustrating and describing the full line of burnt clay wares which the Company manufactures.

NEW BOOK.

Estimating the Cost of Buildings with important chapters on estimating the cost of building alterations, and on system in the execution of building contracts. A systematic treatise on factors of cost and superintendence, with working citations. By Arthur W. Joslin, Building Estimator and Superintendent. Illustrated. New York, David Williams Company.

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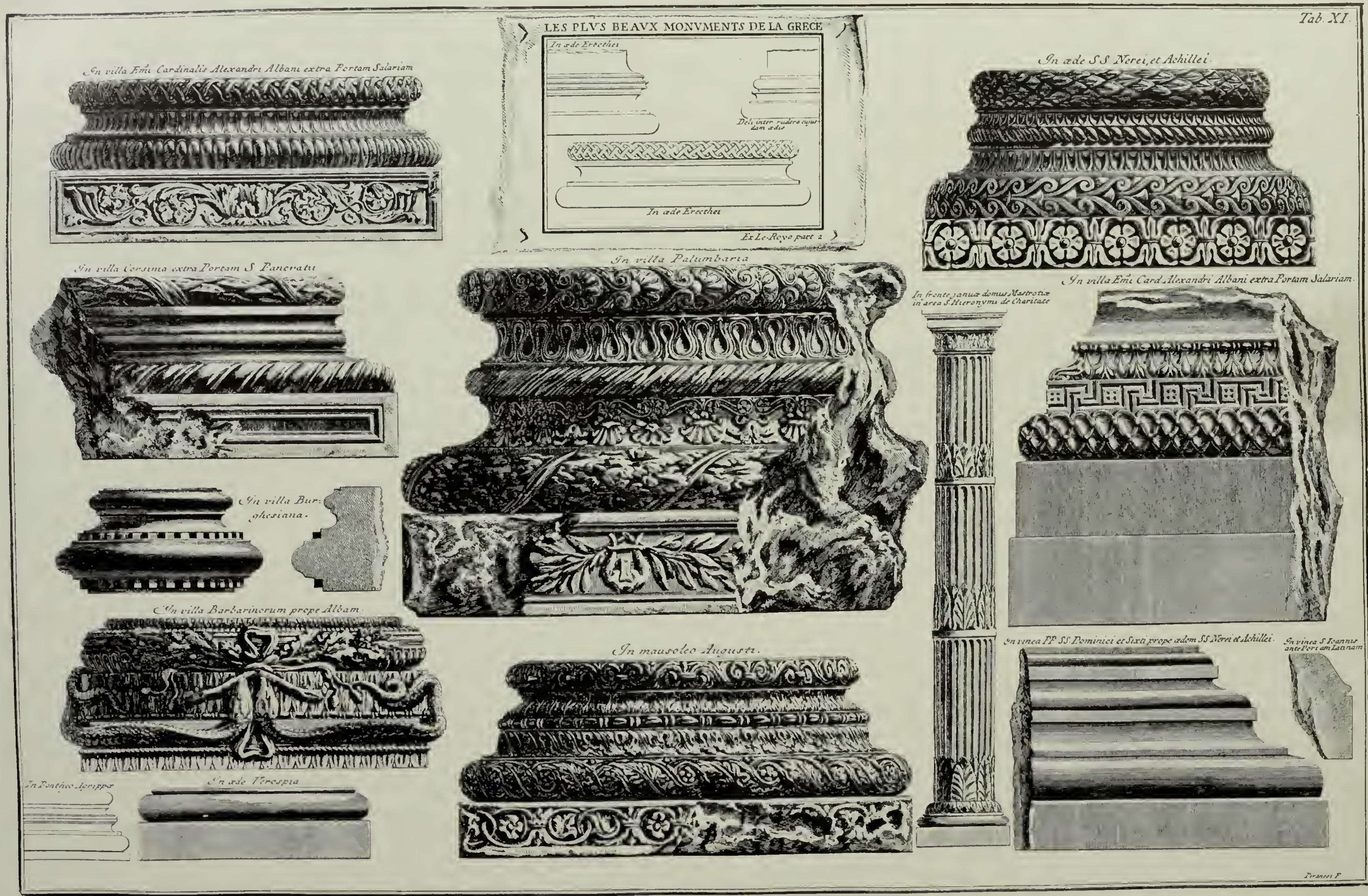


BASES AND A COLUMN FROM ANCIENT ROMAN BUILDINGS, WITH AN OUTLINE DRAWING OF BASES FROM THE ERECHTHEUM, ATHENS.

GIOVANNI BATTISTA PIRANESI, DEL.

THE BRICKBUILDER

VOL. XIX. NO. 8. AUGUST, 1910.

Hints on Architectural Acoustics.

BY HUGH TALLANT.

PART II. (CONTINUED).

COMPUTATION AND PRACTICE.

FOR auditoriums of irregular shape, or which have only one or two dimensions in excess of 50 feet the question becomes one of personal judgment in the particular case. Some special cases will be considered later on in connection with design and construction.

Echo is produced by an isolated sound or group of sounds. In the open, where there is nothing to develop reverberation, echo results from the deflection of some parts of the sound-wave after a single impact against a cliff or hill. In an auditorium it results from the repeated deflection of some sound or group of sounds in a semi-detached portion of the auditorium where the absorbing capacity is below the average. These sounds wander back to the main body of the auditorium after a perceptible interval of time, and as they have been relatively little diminished by impact they may be much louder than what is left of the other deflected sounds. As everyone knows, this phenomenon is apt to occur in connection with a dome, an aisle-chapel or a long corridor. At the same time it by no means follows that such constructions necessarily involve an echo. The distance between deflections is evidently much shorter in a small space than in a large one, and if the relative absorbing capacity is not smaller yet, the reverberation will die out more rapidly in the smaller space. In any special case these facts must be taken into consideration together with the distance of the detached space from the hearer. A low dome may be, and often is, of distinct advantage. Such a case has already been illustrated in Fig. 8 in connection with the question of loudness. The effect of a dome is dependent largely upon the angle at which the direct sound strikes the tangent at the edge farthest from the speaker. In Fig. 10 this edge is shown at A. If the angle SAB is less than a right angle there is no chance of echo, because sounds striking at A will be deflected into the auditorium in the direction AC. There may, however, be sound interference at C, if AC is nearly opposite in direction to SC; and there may be indistinctness at D, if SAD is 80 feet longer than SD. On the other hand if SAB is an obtuse angle as shown in Fig. 11, there will probably be a sharp echo in the vicinity of D or E, and if the sound is deflected as shown in Fig. 12 there will be a prolonged echo throughout the entire auditorium which will be particularly accentuated at D and E. A similar method of investigation may be applied to any other irregularity in the enclosing surfaces of an auditorium, and usually a mere inspection of the architectural drawings will be sufficient to indicate the possibility of echo.

QUALITY OF TONE. The same reasoning which has been applied to loudness and distinctness, applies with even greater force to quality of tone. Methods which give satisfactory results in a small auditorium cannot safely be applied to a large one. In a small auditorium, where the deflected sounds arrive in rapid and unbroken succession the effect of reverberation which they produce tends to support and enrich the natural quality of the sound. It may, however, easily become excessive, and must be carefully computed in advance.

As already mentioned the most convenient measure of reverberation is the time that it remains audible after the original cause has ceased.

The duration of audibility depends upon three factors; the initial intensity of the sound-wave, the average absorbing capacity of the auditorium, and what has been called the "mean free path" between deflections.

The initial intensity is, of course, a variable quantity, but what the architect requires is merely an arbitrary standard as a basis for relative classification. For this purpose it is convenient to assume that the initial intensity is one million times the minimum limit of audibility.

The average absorbing capacity depends upon the relative amount and position of the various absorbing materials composing the walls and contents of the auditorium. If the deflecting surfaces were absolutely non-absorptive a sound-wave would continue to be deflected for some hours from wall to wall before it would be noticeably diminished by the action of the atmosphere. In point of fact, however, few sounds remain audible after more than 200 impacts, and the greater part are destroyed by less than half that number. In the case of any given portion of the sound-wave, it is a matter of chance whether or not it happens to be destroyed early in its course by striking upon highly absorptive surfaces. When, however, the deflections occur with extreme rapidity, each portion of the enclosing walls will receive a number of impacts approximately proportionate to its area, and there is thus established an *average absorbing capacity*, which is readily determined for any given auditorium by dividing the total absorbing capacity by the superficial area of the deflecting surfaces. This calculation does not, however, take account of the shape of the auditorium, which has a pronounced effect. If the shape is such that there is a tendency for the sounds to strike relatively often upon highly absorptive surfaces, the average absorbing capacity is correspondingly increased. This contingency always arises when the walls and ceiling are intentionally curved so as to deflect the sound immediately to any part of the audience. It also occurs when the rear walls are intentionally inclined so as to deflect the sound to highly absorptive surfaces before it can create interference. These and similar considerations cannot readily be included in a practical mathematical formula, but they must be noted and allowed for in the results of any computation.

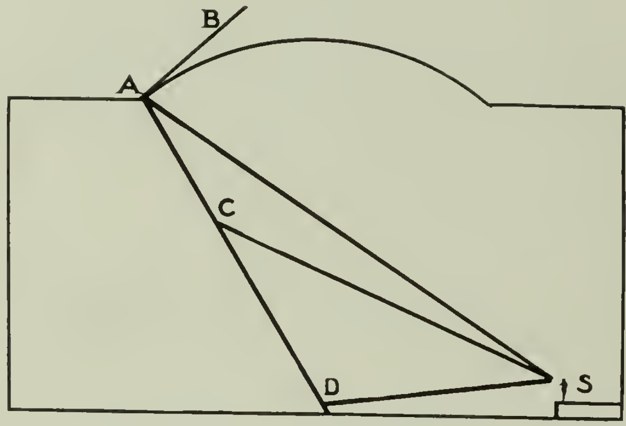


FIG. X

The path traveled by any particular portion of the sound-wave is liable to as great variation as is the amount absorbed by deflection. A sound may strike near the corner of the room where the distance between impacts amounts to little or nothing, or it may travel back and forth the full distance between opposite walls. It may even travel in a straight line as far as the longest diagonal of the room, but if the deflections occur with great rapidity there is established a certain average distance, P, between impacts, called the *mean free path between deflections*. In a rectangular room the mean free path is approximately equal to half the average of the three dimensions and the longest diagonal. This value is convenient for architectural purposes, because the three dimensions and diagonal may be readily obtained by direct measurement, but it has the disadvantage of not being applicable to rooms of irregular shape. A value of more general utility is sixty-two one-hundredths of the cube root of the volume.*

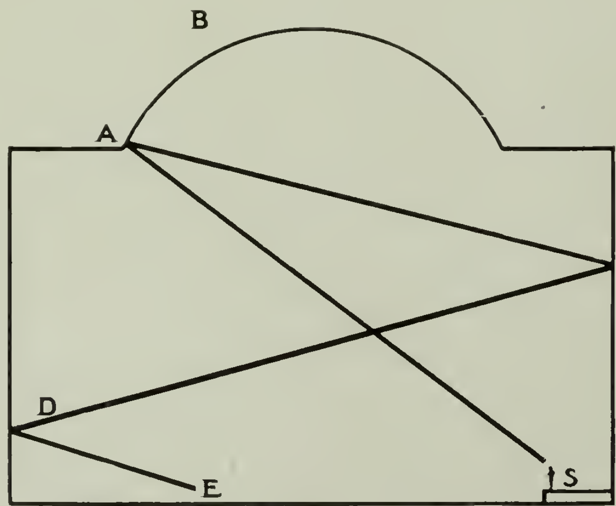


FIG. XI

It is to be noted, however, that neither of these values for P takes into account the shape of the room. Nevertheless shape may be a very important factor. Suppose that Fig. 13 represents the section of an auditorium to which the balcony indicated by the dotted lines has been subsequently added. The alteration does not change the general dimensions at all and affects the volume but slightly even if careful deduction is made for the cubic contents of the balcony. The *calculated* value of P will therefore be practically unaffected by the balcony, although the *real* value will be considerably diminished because sounds which originally were able to travel freely from A to B will now be intercepted at C and deflected back to the direction CD. To a greater or less extent any irregularity of form or contents is likely to reduce the value of P, and must be considered in the results of calculations which do not take account of the shape of the room in some other way.

Given the initial intensity, the average absorbing capacity and the mean free path between deflections, the duration of audibility of the deflected sound can be readily calculated.† The most convenient formula for this purpose is —

$$(A + X)\ T = 0.052\ V$$

Here A is the absorbing capacity of the walls, floor and ceiling, X the absorbing capacity of the contents, T the duration of audibility in seconds, and V the volume of the auditorium in cubic feet.

A may be determined by multiplying the area in square feet of each material by the corresponding coefficient from the following table which gives the absorbing capacity of the principal materials of construction at the pitch of middle C.

* The former value was deduced by the writer from theoretic considerations and has proved useful in estimating the rapidity of sound deflection at the beginning of reverberation. The latter is the result of practical experiment by Professor Sabine. If P is the mean free path, X, Y and Z the three dimensions, and V the volume, the two values expressed algebraically are —

$$P = \frac{X + Y + Z + \sqrt{X^2 + Y^2 + Z^2}}{8}$$

$$P = 0.62\ \sqrt[3]{V}$$

In ordinary cases the two expressions give identical results, which is at least a confirmation of their accuracy. For instance, in the case of a room whose dimensions are 2, 3 and 4, the two expressions give —

$$P = \frac{2 + 3 + 4 + \sqrt{4 + 9 + 16}}{8} = \frac{14.4}{8} = 1.8$$

$$P = 0.62\ \sqrt[3]{24} = 0.62 \times 2.9 = 1.798$$

† A formula directly based on these factors can be deduced as follows: Let I represent the initial intensity, A the average absorbing capacity, P the mean free path in feet, N the number of deflections necessary to reduce the initial intensity to the minimum audibility, and D the duration of audibility in seconds. Then $D = \frac{NP.}{1200}$ But $(1-A)^N I = \frac{1}{1{,}000{,}000} I$ whence $N = \frac{-6}{\log.\ (1-A)}$. Therefore $D = -\frac{P}{200 \log.\ (1-A)}$. This formula has only a theoretic interest in this connection as it is less convenient for practical use than the one given in the text.

Open window	1.000
Wood sheathing (hard pine)	.061
Plaster on wood lath	.034
Plaster on wire lath	.033
Glass, single thickness	.027
Plaster on tile	.025
Brick set in Portland cement	.025
Audience	.96*
Carpeting on heavy batting	.40

X may be determined by multiplying the amount of any given material by the corresponding coefficient from the following table:—

Isolated woman		5.81
Isolated man		5.16
Plain ash settees with solid seats and vertical ribs in back		.42
Plain ash settees per single seat		.083
Plain ash chairs "bent wood"		.088
Settees upholstered on seat and back with hair cushions covered with leather		11.836
Upholstered settees per single seat		3.0128
Upholstered chairs similar in style		3.228
Hair cushions per seat		2.2596
Elastic felt cushions (cotton covered with corduroy)	per seat	2.152
House plants per cubic foot		.033
Oil paintings, inclusive of frames	per sq. ft.	.28
Carpet rugs	,, ,, ,,	.20
Oriental rugs, extra heavy	,, ,, ,,	.29
Cheese cloth	,, ,, ,,	.019
Cretonne cloth	,, ,, ,,	.15
Chenille curtains	,, ,, ,,	.23
Hair felt, 1 inch thick, 3¼ inches from wall, per sq. ft.		.78
Cork, 1 inch thick, loose on floor, per sq. ft.		.16
Linoleum, loose on floor per sq. ft.		.12

In the first table the audience is given as part of the enclosing surfaces of the auditorium. In this case each person is supposed to occupy about 4½ square feet, and the absorbing capacity of the floor and seats is included in the coefficient. Where the audience is distributed over a larger area, each person must be taken separately as part of the contents of the room in accordance with the value given in the second table, and in this case the absorbing capacity of the floor underneath each person must be calculated in addition to the absorbing capacity of the person. The same is true of all the other articles mentioned in the second table whose absorbing capacity must be added to that of the adjacent walls or floor.†

The duration of audibility as computed by the preceding method, establishes a standard by which the relative amounts of reverberation developed in small auditoriums may be compared. Experiments by Professor Sabine have shown that for rooms varying in volume from 2,500 cubic feet to 7,500 cubic feet a calculated reverberation lasting 1.1 seconds gives the most pleasing effect for piano music. Similar calculations by the writer in the case of music-rooms of somewhat greater size have given similar results. On the other hand, for speaking purposes a calculated reverberation of 1.1 seconds is a maximum, and a shorter duration of audibility is preferable. In the absence of data to the contrary these experiments seem fairly to indicate a standard with which other rooms may be compared.

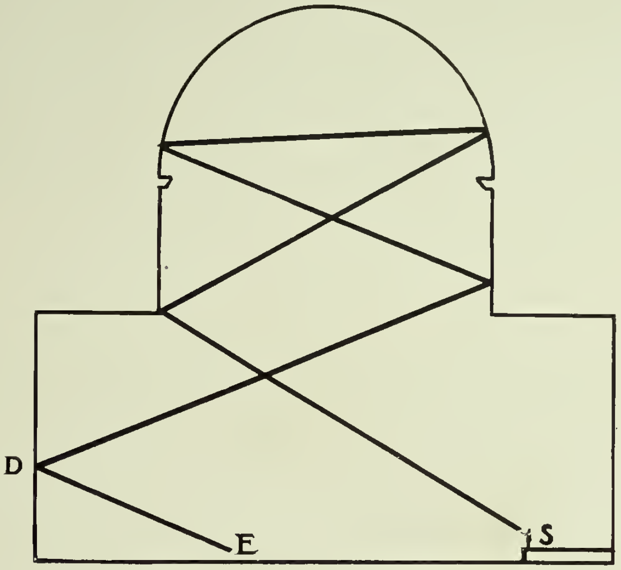


FIG. XII

In a practical case the procedure is extremely simple. All that is necessary is to compute the duration of audibility by the method given, and then arrange for the addition of removal of sound-absorbing material until the computation gives satisfactory figures. It is to be noted, however, that this method does not take account of variation in absorbing capacity corresponding to variation in pitch. Two rooms might easily have equal absorbing capacities at the pitch of middle C and very different absorbing capacities at some other pitch. There are evidently theoretic possibilities demanding careful investigation before results can be absolutely guaranteed, but as the character of the materials entering into the construction and furnishings of the ordinary room varies but little, the chances of failure by the method suggested are relatively small.

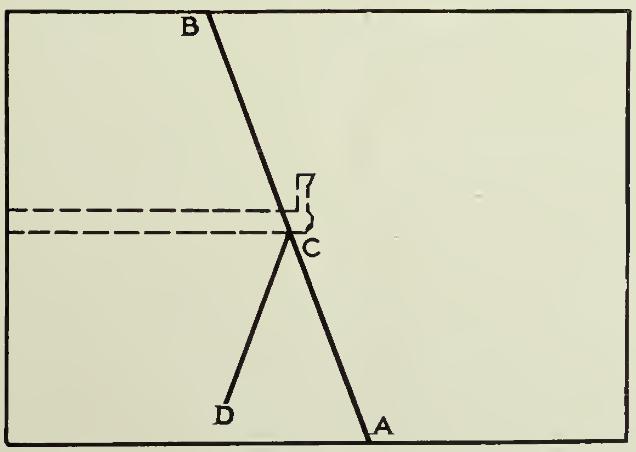


FIG. XIII

At the same time it must not be forgotten that the formula upon which this calculation is based does not take into account the shape of the auditorium and the location of the different absorbing surfaces. It is easy, and often expedient, to increase the average absorbing capacity of an auditorium by deflecting a large body of sound

* By a clerical error this coefficient was given as 0.94 in the first article of this series.

† This entire method of computing the duration of audibility is taken bodily from Professor Sabine's treatise by his consent. The same is true of the tables of absorbing capacity with the single exception of the coefficient for carpeting which is the writer's rough estimate.

at once to a surface of high absorbing capacity. Wherever the architect has reason to suspect that this is likely to occur, either intentionally or by chance, he must take careful account of the contingency in his computations. Some suggestions along these lines will be given later on in connection with practical design. Where the average dimension of an auditorium exceeds 50 feet the chance of error in the calculated results becomes so large that it is preferable to attack the problem along totally different lines. The safest procedure is to diminish the reverberation to the utmost possible extent by directing all deflected sound at once to surfaces of high absorbing power. This treatment tends to produce a lifeless quality of tone which while excellent for purposes of distinctness is unsatisfactory in an auditorium devoted to music, and must be offset by the introduction of resonant material as explained in the first article of this series. This method is hardly one of scientific accuracy, but it has never failed to give satisfactory results in the numerous cases which have happened to come under the writer's supervision.

Further investigation will doubtless lead to more definite means of dealing with reverberation in the case of large auditoriums, but in the meantime the procedure suggested is likely to lead to nothing worse than a lack of brilliancy of tone — a much less serious defect than an excess of reverberation and its usual concomitants, indistinctness, and echo.

Planning of Children's Hospitals.

BY CHARLES BUTLER.

THE Children's Hospital as a separate institution is a recent development in the United States. Until a short time ago it was the custom even in large cities to provide for the treatment of children in one of the wards of a general hospital, as is the case in the New York Hospital, the Michael Reese Hospital in Chicago, and others.

The existence of a Children's Ward in a general hospital causes a far greater complication and inconvenience than is offset by the service performed. This result is due to the requirements for observation, isolation, etc. and the tendency which has become apparent of late to care for children in separate institutions is one more step in the economic improvement of hospital practice.

Among the earlier Children's Hospitals should be cited the one at Toronto, known also for its splendid Island Hospital where the patients spend the summer months three miles out in the lake, and for its Nurses' Home which has set a standard for future buildings in that line. More recently Children's Hospitals have been erected in Chicago and Buffalo, while others are being planned for Boston, St. Louis, Philadelphia and other cities.

In Baltimore the Harriet Lane Home for Invalid Children is now in process of erection on the grounds of Johns Hopkins Hospital, and the plans form the basis for this article, the writer having been identified with their preparation through the association of his firm with that of Wyatt & Nolting of Baltimore. In considering these plans it should be borne in mind that the buildings are placed in the grounds and joined to the main buildings of Johns Hopkins Hospital by the corridor which unites all of the buildings to the main Administration Building.

The buildings are exhaustively described, with the idea that from this concrete example it will be easier to draw general conclusions as to the essentials of a Children's Hospital. And it may be added that the work was planned only after a most exhaustive study of the best examples of recently built Children's Hospitals in this country and abroad.

The principle of the composition in plan is as follows: Facing on the long garden or courtyard is the main building of the hospital consisting of a basement and five stories; through the east and west axis of this main building runs the connecting corridor which, in the case of the basement, is continuous while on the first floor the circulation is interrupted by the out-patient department. In the rear of the central portion of the main building is the lecture room and south of this are three one story ward buildings for observation and isolation.

Owing to the connection with Johns Hopkins Hospital there is no need to provide for a laundry. For the present at least it is planned to make use of the main kitchen of this hospital, bringing food in wagons through the basement corridor to the receiving rooms, where access is had to the automatic dumb waiters leading to the diet kitchen on each floor.

Similarly the food wagons can pass along the basement corridor which, lying to the east of the lecture room, leads to the small receiving rooms at the foot of the dumb waiters which serve the three diet kitchens in the Isolation and Observation Wards.

Adjoining the receiving rooms are the soiled linen rooms into which open the clothes chutes from the main building and the three rear wards, so that the transportation of soiled clothes is entirely in the basement. This is an especially convenient arrangement in the case of the rear wards, each of which has also its sterilizing room in the basement in close proximity to the soiled linen room.

By means of this arrangement for basement connection to the three rear buildings it is possible to isolate them completely. Living quarters are provided in the second floor for the nurses on duty in these three wards, so that with the exception of the visits from the medical staff, there need be no communication on the level of the wards.

It is the intention to put all patients in hospital clothing. In as much as in a children's hospital most of the patients are brought to the institution by their parents it is planned to have the latter carry away with them the clothes worn by the children, bringing them back at the time of the patient's discharge. By this method the space required for locker rooms for patients' clothes is reduced to a minimum, as it is necessary only to provide for the few patients who have no families to care for their effects. For these is provided in the basement at the east end a locker room with adjacent sterilizing room.

To the east of the soiled clothes room is provision for elevator and dumb-waiter machinery and across the hall a room for the fresh air intake and fan.

As none of the help sleep in the building it is necessary only to provide small locker and toilet rooms for their use.

Steam and hot water are furnished from the main power plant of the hospital so that a relatively large part of the basement is left free for laboratories, or for future kitchens if it should be decided to make the hospital independent of the main kitchen.

The main elevator of the building is placed just north of the corridor to the east of the entrance. A short rise elevator goes from the level of the lecture room to the level of the first floor and is planned to permit the transportation of patients in their beds for demonstration in the lecture room.

The general scheme of arrangement becomes more clear as we study the ground floor plan. The east end of the building contains the out-patient department, accessible by an outside incline at the end of the building, which is planned for the convenience of mothers who bring small children in perambulators. Space is also left in the covered corridor to the east of the building for carriages, while the infants are being treated in the dispensary.

The entrance to the dispensary is through a small vestibule, where arrival is under the scrutiny of a nurse in the office overlooking the entry and waiting room. Should a case present suspicious symptoms it is at once directed into the small infectious waiting room which is divided into stalls with high marble partitions. Cases not arousing suspicion pass into the general waiting room. To the west of these waiting rooms are the pharmacy and four examination rooms; the former, which needs but a relatively small area as it is a distributing pharmacy only, opens directly off the general waiting room. In connection with each waiting room there is a toilet. In the main waiting room is also a gas stove so that mothers can heat milk for their infants if they are delayed past feeding time. Each examination room is provided with instrument sterilizer and sink, as are also the infectious waiting room and the nurses' office.

As will be noted on the plans an outside open corridor leads from the infectious waiting room directly to the rear ward buildings, so that patients may be sent directly to the central or observation pavilion or to one of the two isolation wards. This outside corridor also provides direct access to the lecture room so that contagious or doubtful cases may be brought directly before the students, without passing through the main hospital.

To the west of the entrance are the general office and the bath and dressing room for new patients, where the children are bathed and put in hospital clothes before entering the main hospital wards. On the north side are two working laboratories and west of these are two bed rooms and a bath for internes, as well as a laboratory and office for the director. From this end of the building access is also provided to the lecture room. This room is placed several feet below the ground floor level to permit of the necessary ceiling height for a very steep amphitheater without raising the roof above the level of the second floor, as this roof like all the five ward roofs, is utilized for a roof garden.

The students' entrance to the lecture room is through a door on the west side which leads into an ample vestibule and by a double staircase to the coat room, and thence to the upper portion of the lecture room. Passing through the open connecting corridor we reach the three rear wards, the center one of which is a true observation ward, having each bed placed in a small alcove with glazed partitions 7 feet high surrounding it on three sides. The service rooms for this ward, as for the two isolation wards, are a repetition on a slightly smaller scale of the service rooms of the general wards in the main building. The same principles of separation of service, which will be noted hereafter in connection with these wards, are seen here; i.e. all food service is by itself, all nursing is by itself, all disinfecting and emptying of bed pans and urinals are separated from the other services and from the patients' bath and toilet services, and finally the housemaids' sink and closet are independent of the nurses' service rooms. In connection with each of these wards is a private room and bath and as each ward is planned for ten beds the three rear pavilions can accommodate in all thirty-three patients.

Each pavilion contains also a small nurses' dining and sitting room, and on the second floor three bed rooms and a bath permitting, as already explained, the isolation of each unit.

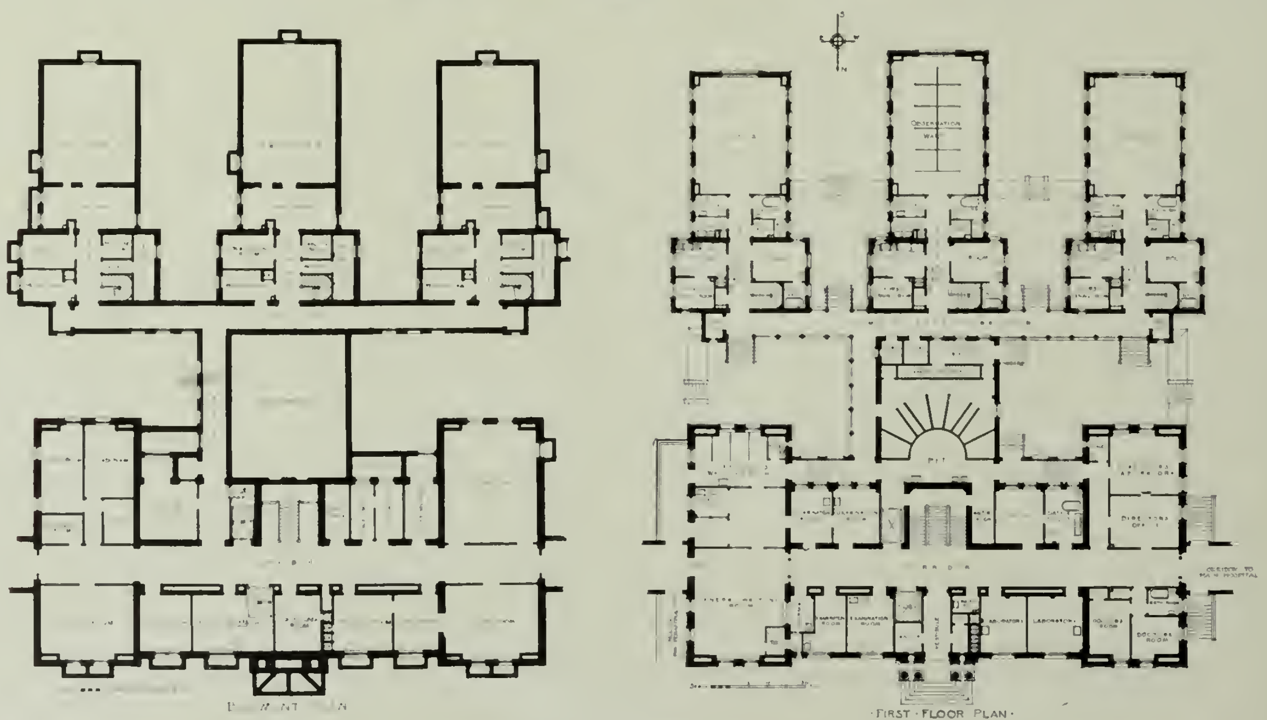
Outside of each pavilion is a coat closet where the attending physicians leave their outer clothes, while just inside the buildings are the lavatories and the lockers containing gowns and caps. The principle of glazed partitions which is referred to in the matter of the observation ward, is also applied to the partition between the sink room, service room and ward on one side, and between the patients' bath room and ward on the other side, in order that a nurse in any one of these rooms may have complete control over the ward proper. The construction of these partitions will be referred to later.

The lecture room contains space for demonstrations, the pit having a diameter of 15 feet with skylight directly overhead. The steps of the amphitheater, six in number, rise rapidly and are shallow in proportion to their height, so that students in the rear rows will still be relatively near the demonstration. An unusual feature is the absence of seats in the amphitheater; a condition which brings the students much closer to the lecturer than could otherwise be possible.

The second floor is divided entirely into private rooms. The central portion contains the diet kitchen placed directly over the entrance and served by a special dumb-waiter from the receiving room in the basement. The diet kitchens contain the usual equipment: steam table with gas heater and plate warmer, refrigerator, sink with porcelain drain boards, cupboards for supplies, porcelain lined refrigerators, and in place of the usual dressers shelves built of heavy wire mesh so exposed as to leave no gathering places for dust, and tray racks of the same material. These kitchens also contain small utensil sterilizers so that dishes and silver may be sterilized. Live steam also is brought to each drain board, so that milk bottles, cans, etc., may be sterilized without difficulty. The kitchens have floors of vitrified tile, and Keene's cement wainscots 8 feet high finished with enamel as are the wire racks and refrigerators. This description applies to the diet kitchens throughout the building.

To the west of the diet kitchen is a small service room containing the porthole to the clothes chute which can be closed with a heavy cover screwed tight when it is desired to disinfect the clothes chute. Here are also a disinfecting sink and drying closet so that soiled clothes may be disinfected and dried before being sent to the laundry. This room is also repeated on the upper floors, although in this particular case it is larger in order to provide storage space for the two movable tubs with their supplies and drains.

To the east of the diet kitchen are two small offices for nurses and doctors, essential elements of a private ward plan. There are also separate closets for housemaids, for emptying bed pans, and linen and store closets.



PLANS OF THE HARRIET LANE HOME FOR INVALID CHILDREN, BALTIMORE, MD.
Wyatt & Nolting, Architects, Butler & Rodman, Associated.

There are on this floor fourteen bed rooms including the head nurse's rooms, some of which are arranged *en suite* as at the southwest corner, others have private baths or private toilets or sharing toilets, while some single rooms have wash basins only; an arrangement adopted to meet the requirements of every purse. To the south of the main corridor is a sun parlor opening on the roof garden, over the lecture room.

Like all the roof gardens of the hospital, this one is protected by a rather low brick wall with stone coping so that patients even from their beds are able to see the ground outside. To prevent any possibility of accidents in the case of convalescents, a high wrought iron railing runs from the roof level to a point 5 feet above the coping of the parapet making it quite impossible for the most active children to climb over the top.

The two outside staircases from the upper stories land upon this roof, and in case of fire access may easily be had to the lower roofs of the connecting corridors and thence to the ground at the rear.

Over the three rear wards are also roof gardens cut off from the private floor roof garden by the two story portion of these wards, which is not so high, owing to the lower grades of the rear pavilions, as to interfere with light and air.

The roof gardens over the two outside rear pavilions will be especially useful, as on them convalescent contagious cases can enjoy the fresh air without danger to other patients.

The third is a typical ward floor with diet kitchen located and equipped as on the floor below, served by two electric dumb-waiters with automatic control, and with a small service room giving access to clothes chute. It should be mentioned that these clothes chutes are of No. 20 gauge spiral riveted iron, and with the porthole doors above mentioned which may be hermetically sealed for disinfection.

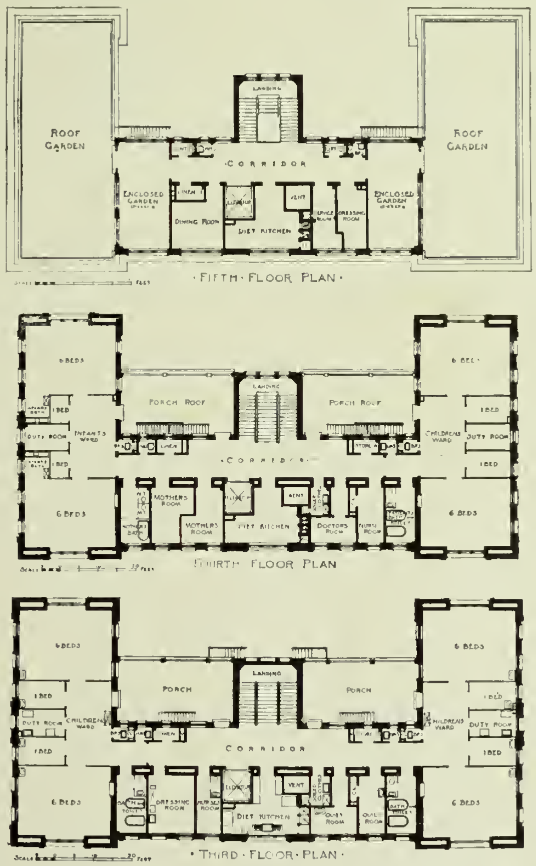
To the west of these rooms on the north front are two quiet rooms and beyond these comes the patients' bath and toilet room with fixed and movable tubs, water closet and lavatory; all separated by marble partitions and wainscots 7 feet high carried down into the tile floors with marble coves.

To the east of the diet kitchen is a nurses' office and toilet, and beyond that for the service of the surgical ward at the east end of the building is a surgical dressing room with complete sterilizing outfit for hot and cold water, dressings and instruments, and surgeons' sink. This room has a double sound-proof door and tiled floor and is a most essential part of the equipment of a children's hospital, as in this way the cries of a child having a dressing changed do not demoralize the other patients in the ward.

At each end of the corridor and opening directly into the wards are small closets containing bed pan hoppers. These closets have outside light and ventilation in addition to forced ventilation and contain small vented closets in which specimens may be kept for inspection. Mention should here be made of the fact that the width of the main corridor, 10 feet, is established by the width of the general connecting corridor of the Johns Hopkins Hospital. As this width is not necessary on the floors above the ground floor it has been possible to place the small service rooms, referred to above, in the corridor without unduly constricting it.

Finally the "duty rooms" with gas range for heating poultices, refrigerator for ice for external use, sink, board for charts, and other necessities are placed in the center of each ward, thus completing the separation of the four types of service required in a hospital ward, i.e. patients' toilets and bath, housemaids' service, disposition of feces, etc., and nursing proper.

The wards proper show perhaps the most interesting arrangement in this building; one that is very little known in this country, but found more frequently in Europe. The ward contains fourteen beds separated into four units, two of six beds and two of one bed each. The separation between units is affected by means of partitions 7 feet high of which the lower 3 feet are plastered coming down to the floor with coved base, while the upper 4 feet are glazed. By this means a partial segregation is effected; temperatures at the two ends of the ward may vary considerably while a general circulation of air is maintained.



PLANS OF THE HARRIET LANE HOME FOR INVALID CHILDREN, BALTIMORE, MD.

This scheme of separation gives many of the advantages of the small ward systems so desirable in the treatment of children, while with the glazing of the partitions it becomes possible for one nurse to control the entire ward thus obviating the practical objection to small wards arising from the increased number of nurses required for proper control. The problems of light and ventilation are also simplified by the fact that the partitions are not carried to the ceilings.

The central portion of each ward will furnish a sort of day room where convalescents can be outside of the ward proper while yet being under the surveillance of the ward nurse. Each of these day rooms communicates directly with a covered porch with southern exposure, and planned similar to all the porches and roof gardens so that beds may be wheeled directly out onto them.

The fourth floor is again a typical ward floor with the exception that the east ward is for babies and is therefore slightly different in detail. Instead of taking the babies outside of the ward proper for bathing it has been possible to reduce the one bed units to a small area, and take the requisite space for babies' baths in connection with each six bed unit on either side of the main duty room.

The arrangement of the west ward and of the general services is the same as on the floor below.

The fifth floor is perhaps the most interesting part of this building; starting in the early studies as a typical roof garden, it has been developed until it now contains two roof wards with complete ward services similar to those on the lower floors. To the east of the diet kitchen is a convalescent dining room, one of the most valuable adjuncts of this floor in addition to a wardrobe for heavy wraps.

At each end of the hall is a large enclosed roof ward with windows filling three of the four sides and with direct access to the open roofs. Heat is provided for all of this floor, so that in case of very cold or inclement weather the enclosed wards may be heated like the rest of the hospital, while in good weather patients' beds may be run directly out onto the open roof where awnings are to be installed for summer use.

The plumbing of the building is on the lines of modern hospital work with great abundance of lavatories both in wards and service rooms. The problem of lighting is simpler than in a general hospital, for the reason that with children exposed ceiling lighting is not objectionable. Wall outlets are provided in ample quantity and are set at a convenient height from the floor so that a nurse can insert a plug without stooping, while the type of receptacle is such that children cannot stick their fingers into it.

The mechanical equipment of the hospital is relatively simple. Fresh air is forced into wards, the general waiting room of the out-patient department and a few other rooms, but in general the windows are counted on for the supply of fresh air to the building. Vents for foul air are provided throughout and a draft is assured by an aspirating coil at the top of the general vent duct, into which all the branch vents are gathered in the space between the fourth floor ceiling and the roof. The air forced into the wards is tempered but is in no way counted on for heating purposes, as all heating is through direct radiation by a hot water system. Steam is furnished for the numerous sterilizers and steam tables, gas is supplied for emergency lighting and gas heaters, and the vacuum cleaning system runs through the building with outlets on each floor. A stand pipe is also carried up through the building with outlets on each floor and roof.

In construction, the building is fireproof, with the walls of brick and the floors of concrete and tile in combination.

The finish of the floors in wards and private rooms is plain brown imported linoleum on cement. This linoleum can be had in 12 foot widths, so that in the 24 foot wards of this building there is but one joint which is to be made tight with cement.

The kitchens, toilet, sink and service rooms are floored with tile while the ground floor corridor, out-patient department, lecture room and central portion of the upstairs corridors have terrazzo which is combined with composition flooring in the corridors and gives way to linoleum flooring in upstairs corridors in order to prevent the noise which is unavoidable with a terrazzo floor.

The base throughout the building is of composition 8 inches high with a 1 inch cove finishing with rounded top 1/8 inch out from the line of the plaster at the top and flush with the finish floor.

The walls of the small sink rooms and of general toilets are of marble to a height of 7 feet, while Keene's cement wainscots are used in kitchens, dressing rooms, etc.

All the interior woodwork is of enamel finish while the walls are painted with oil paint, with the darker tints near the floor and the lighter tones for the upper part of walls and ceilings.

The divisions in the wards are solid 2 inch partitions from the floor level for 3 feet with 4 feet of glass above. The top members of partitions and capping members of solid portions of partitions are rounded in section, of copper built up like show window construction and stiffened with small steel angles and tees. The round sections allow few lodging places for dust and can be easily wiped clean with a damp cloth. It is intended to enamel all this metal work as well as the radiators to match the general tone of the walls.

The stairs are of steel with marble treads and terrazzo landings having gates at each floor. The outside fire escapes take the form of staircases similar in rise and tread to the inside stairs and lead down from the two roof gardens, through the third and fourth floor porches, to the second floor roof garden over the lecture room whence easy access is had to the roof of the porch connecting the main building with the rear pavilions, as already described.

All of the roof gardens have floors of red promenade tile, with sockets built into the roofs to receive the bottom of the awning supports.

The doors to elevators are of the accordion type to avoid the noise and shock which arise from sliding doors, and are covered with copper and glazed with wire glass.

The sills throughout the building, whether of marble or cast iron, are set absolutely flush with the floors in order to offer no obstruction to the wheeling of beds, while in the case of outside sills the top surface slopes about 1 inch to the outside finishing flush with the outside and inside floors.

The type of outside shutter adopted is one which has proved most successful at Johns Hopkins Hospital. While each blind is hinged at the side to swing out, the frame itself is hinged at the top so that it is possible to close both blinds and then push out the entire frame at the bottom, thus protecting the room from sunlight and allowing the air to enter freely. When double and triple windows occur, Jolliffe blinds are employed.

The interior trim is of clear white pine and is reduced to the minimum with rounded surfaces throughout, while the doors are birch veneered hospital doors. Fly screens are provided for all windows and doors.

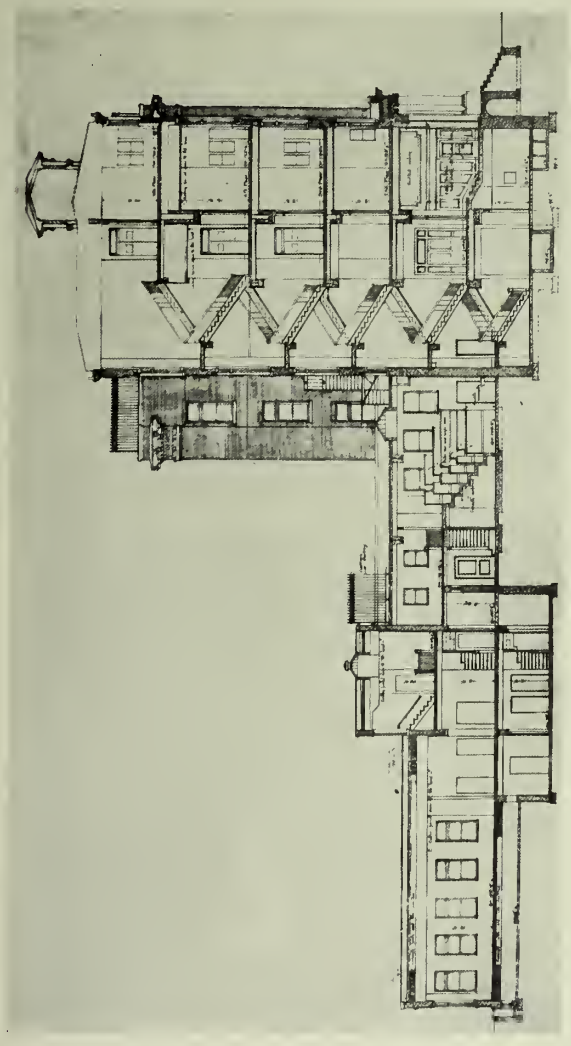
For the dressers in diet kitchens the example of the Johns Hopkins Hospital has been followed. All the wooden shelving has been replaced by 1⅛ inch wire mesh shelving enameled white and baked. The shelves are set out from the wall and carried by brackets and no closed-in corners are left to gather dust. On the other hand, in a dusty neighborhood it would doubtless be preferable to keep to the old-fashioned type of enclosed dresser. Deeper shelves with cross rods only and no wire mesh are provided for trays.

The linen closets have the ordinary wooden shelving set 1 inch away from the walls and with a slot 1½ inches wide down the middle of each shelf for facility in dusting.

The hardware is of plain substantial character. Plain glass knobs are employed, and set higher than is customary so that they will be out of the reach of the smaller children.

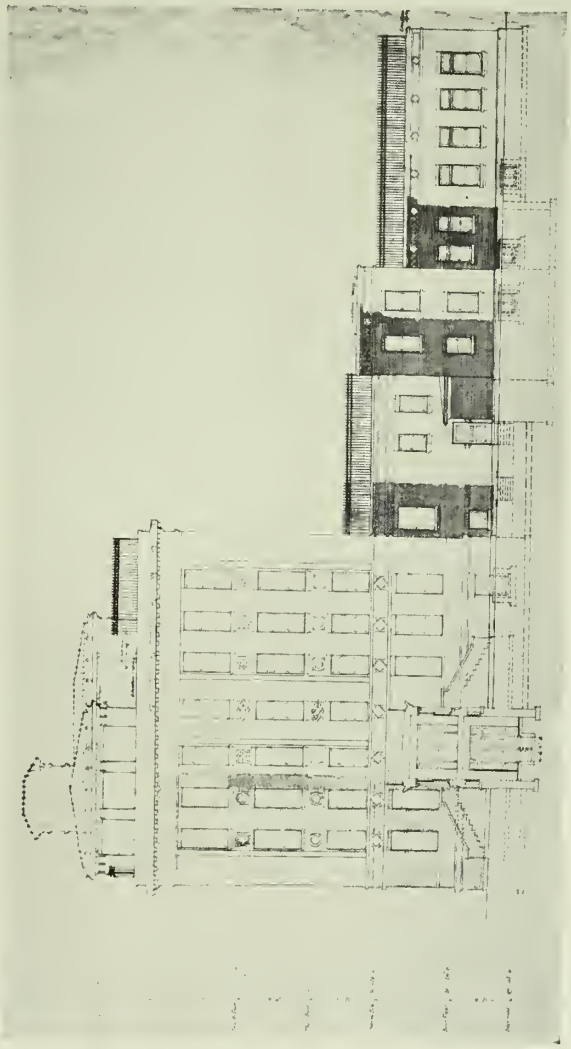
In connection with the main bath rooms it is to be noted that the tubs are raised to a height of 31 inches in place of the usual height of about 20 inches, so as to reduce the exertion required for lifting children into and out of tubs. The general bath rooms each contain a countersunk marble slab, 2 feet by 4 feet with an 18 inch back, supplied with hot and cold water and with a 2 inch waste on which it is possible to bathe the children who are too ill to be put in the tubs. The surgeons' sinks throughout have the "Clover" knee action wastes with foot control supplies.

REAR ELEVATION.



TRANSVERSE SECTION.

FRONT ELEVATION.



SIDE ELEVATION.

HARRIET LANE HOME FOR INVALID CHILDREN, BALTIMORE, MD.

Wyatt & Nolting, Architects, Butler & Rodman, Associated.

Disinfecting sinks are furnished for each ward in order that housemaids' sinks may not be used for this work.

The majority of the bed pan sinks are sterilizing sinks and when these are not used clinical sinks with cleaning jets are employed.

In order to avoid the necessity of carrying bed pans through the halls on the private patients' floor each water closet has a movable gooseneck supply so that bed pans may be emptied into the closet, flushed and cleaned on the spot.

The diet kitchen sinks are of porcelain, enameled, the smaller being 20 inches by 30 inches and the larger 20 inches by 36 inches with 24 inch porcelain enameled drain boards at each side through one of which a jet of live steam is brought for sterilizing milk cans, etc.

The type of infants' baths already mentioned consists of two countersunk marble slabs arranged like drain boards, emptying into a porcelain enameled sink. Over these sinks are placed special mixing tanks from which descend a spray on an articulated piping system which may be turned through a considerable radius, supplied with foot control so that the nurse after regulating the temperature of the water has both hands free to bathe the infant. This is an Austrian appliance introduced into this hospital by Dr. Von Pirquet. The infants' bath proper is on the lines of those now in use in the Presbyterian Hospital in New York.

The hospital is well equipped with sterilizers, especially in the general surgical dressing rooms and the examination rooms, dispensary, lecture room, etc. In addition to these utensil sterilizers are set up in each diet kitchen. Blanket warmers are furnished in connection with each ward, those in the infants' ward being placed close to the infants' baths.

In general the Mott type has been adopted with wrought iron piping and screw joints and return elbows, carried under each shelf, but in most cases in order to avoid the annoyance of heating the surrounding air instead of only the blankets, these warmers have been made with double walls and non-conducting linings.

In connection with the disinfecting sinks, drying closets are installed so that objects requiring disinfection may be dried before being sent down the soiled clothes chutes. The plan of these closets includes the heating coils placed at the bottom of the closet with a perforated shelf over and with rods projecting from the back of the closet and supported by brackets on which may be hung the objects to be dried; this type being more easily cleaned than the usual built-in closet.

Porcelain enameled iron medicine cabinets with plate glass shelves and doors are built in the walls of the wards.

The refrigerators in the diet kitchens are of the solid porcelain lined type, each section consisting of a single piece of solid cast porcelain without joints. The outside of the refrigerators is finished in white enamel in place of the usual natural finish, as the white seems more in keeping with the general modern finish of kitchens.

The small ice boxes for ward service rooms are intended only to contain ice for external use and are wood lined only.

The diet kitchens contain combination steam tables and gas ranges with plate warmer hot plate and broiler. The steam table contains one meat and four soup and vegetable jars while each fixture is supplied with a 5 foot hood and vent.

Servants' lockers, also lockers to contain robes and caps for visitors to observation wards are of metal, following out the principle to employ the least possible amount of wood throughout the entire building.

The exterior of these buildings has been treated in red brick to harmonize as much as possible with the present buildings at Johns Hopkins. In order to make the buildings more cheerful inserts of terra cotta and brick patterns have been added. Where no conditions of buildings already existing are met it would perhaps be more appropriate to use light brick with colored tile inserts, as has been done most attractively in both the Children's Hospitals in Buffalo.

First, of all the general essentials of a Children's Hospital, is ample space for observation and isolation. Children should be kept in an observation ward, in certain cases, as long as two weeks before being admitted to the general wards and ample space should be allowed for isolation in case of the outbreak of contagion.

The principle of separation should be carried out throughout the building for children are more easily affected by the condition of those around them, than adults.

The small units of four to eight beds entirely isolated would seem to be even better, but with the absolute separation come the difficulty and increased cost not only of nursing but also of ventilating, so that the compromise system embodied in these plans and already experimented with in Europe seems to offer a practical solution.

The system by which a sort of day room is formed at the entrance of each ward will give an opportunity for keeping convalescents out of the ward proper and yet under the nurse's eye, in bad weather when they cannot be sent to the roofs.

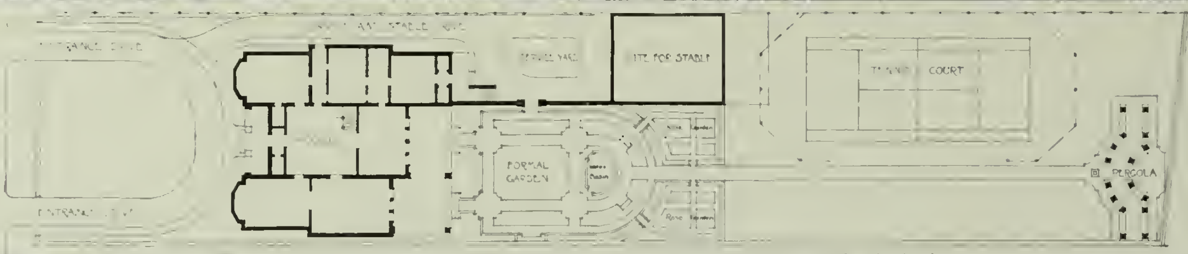
With modern hospital practice, abundance of roof gardens, porches, etc. becomes more and more important, and for children even more than adults this is essential. The roof gardens over the isolation pavilions are also most necessary, as patients recovering from contagious diseases cannot be allowed to play in the gardens with other convalescents and yet must have a place for air and exercise.

The surgical dressing room separated from the ward is an advantage in any hospital, but becomes an absolute necessity in the case of a Children's Hospital.

The arrangement of service rooms in connection with the roofs, so that these may become true roof wards and be used to their full capacity, is a development of the outdoor treatment idea which is applicable to any hospital, but is especially useful in the case of children.

A detail, but one which is too often neglected, is the working out of the fire escapes. In this case they are treated rather as outside staircases with about the same pitch as the inside stairs, and in the upper stories they are placed at the inside of the porches against the wall of the building, so that for those descending them there need be no fear of giddiness nor danger of falling.

It is plain from this résumé that the problem presented by the Children's Hospital is similar to that of the General Hospital, with an additional need of greater facilities for observation and isolation, and in general, the separation of the patients into smaller units than is customary in the general hospital.

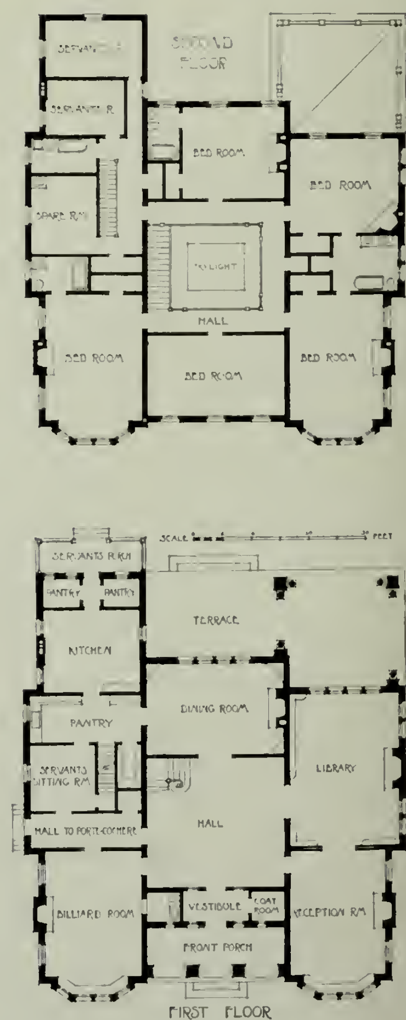


AN – FOR ARRANGEMENT AND PLANTING

HOUSE AT HUDSON, N. Y.
MARCUS T. REYNOLDS, ARCHITECT.

GARAGE AND GARDEN.

DETAIL OF FOUNTAIN IN WALL OF GARAGE.

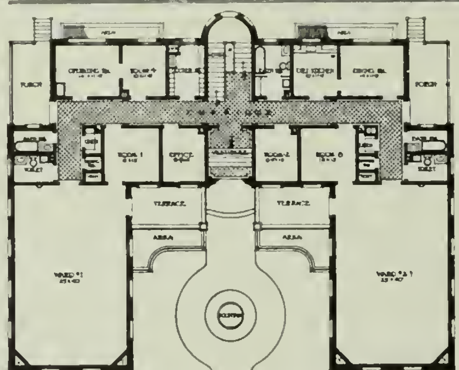


PLANS OF HOUSE.

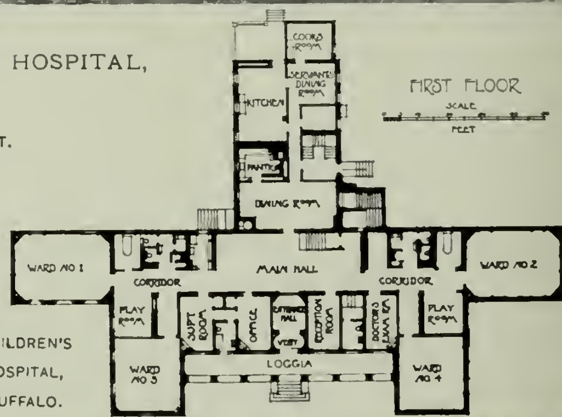
HOUSE AND GARAGE AT HUDSON, N. Y.

MARCUS T. REYNOLDS, ARCHITECT.

HARRINGTON CHILDREN'S HOSPITAL,
BUFFALO, N. Y.
GEORGE CARY, ARCHITECT.

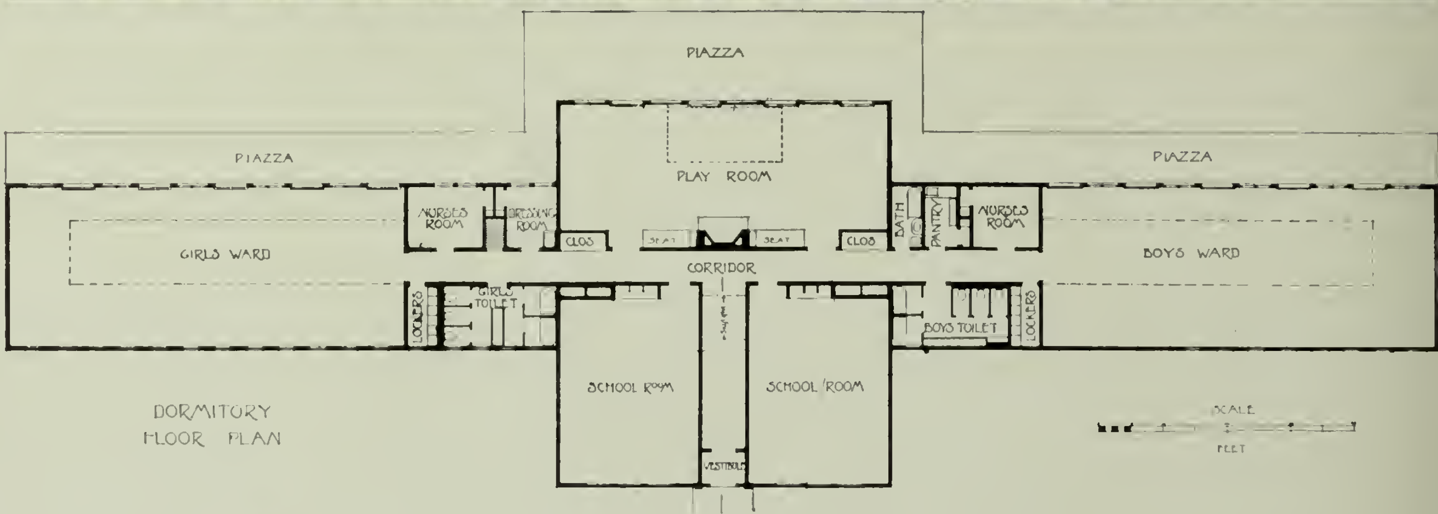


· FIRST FLOOR PLAN ·
HARRINGTON CHILDRENS' HOSPITAL

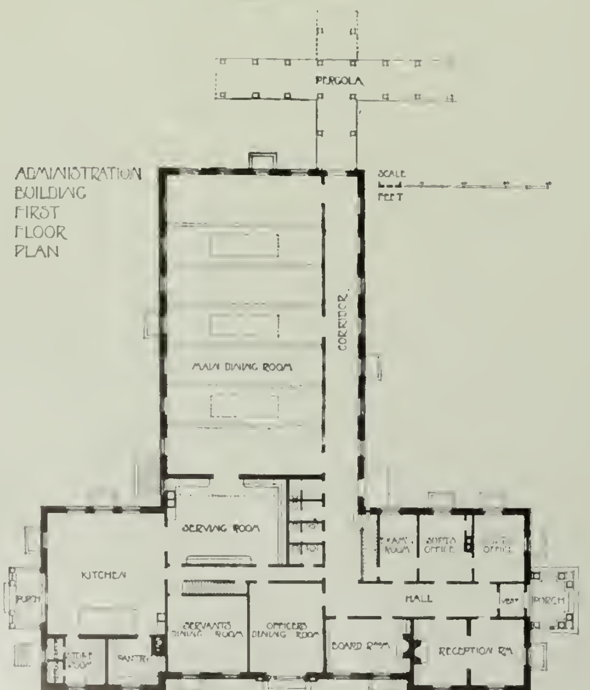


CHILDREN'S HOSPITAL, BUFFALO.

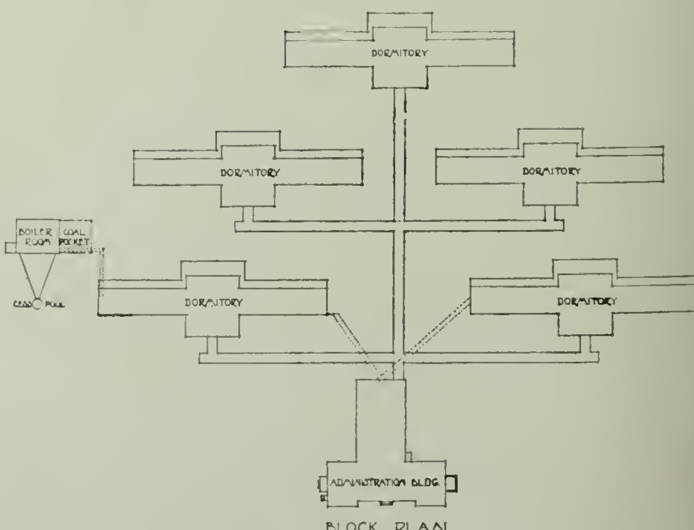
CHILDREN'S HOSPITAL AT BUFFALO, N. Y.
GREEN & WICKS, ARCHITECTS.



DORMITORY FLOOR PLAN



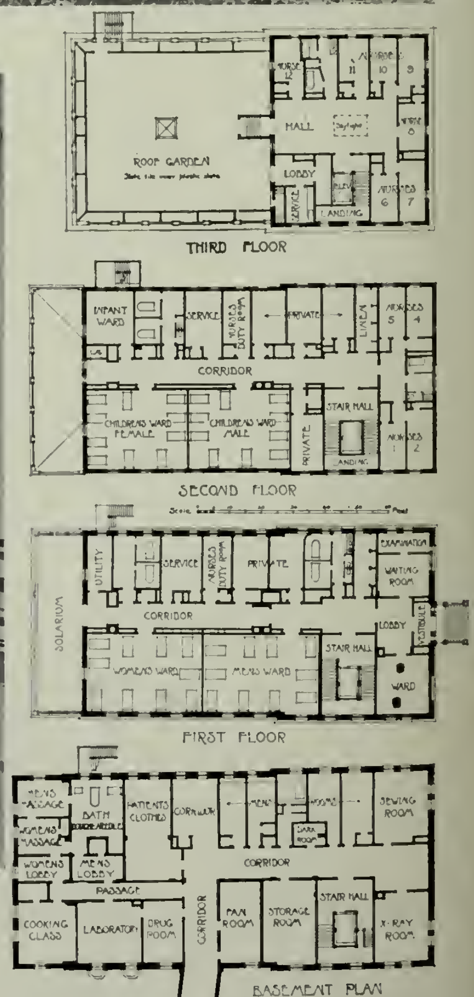
ADMINISTRATION BUILDING FIRST FLOOR PLAN



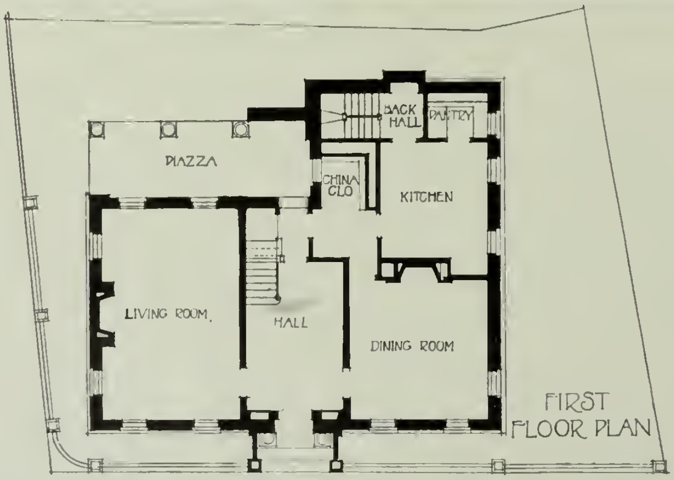
BLOCK PLAN

MASSACHUSETTS SCHOOL AND HOME FOR CRIPPLED AND DEFORMED CHILDREN, CANTON, MASS.

BIGELOW & WADSWORTH, ARCHITECTS.



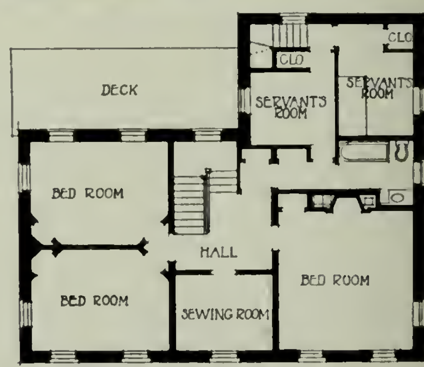
WARD BUILDING FOR CHILDREN, HOSPITAL AT BANGOR, MAINE.
WHEELWRIGHT & HAVEN, ARCHITECTS.



FIRST FLOOR PLAN

HOUSE
AT
SALEM, MASS.

WILLIAM G. RANTOUL
ARCHITECT.

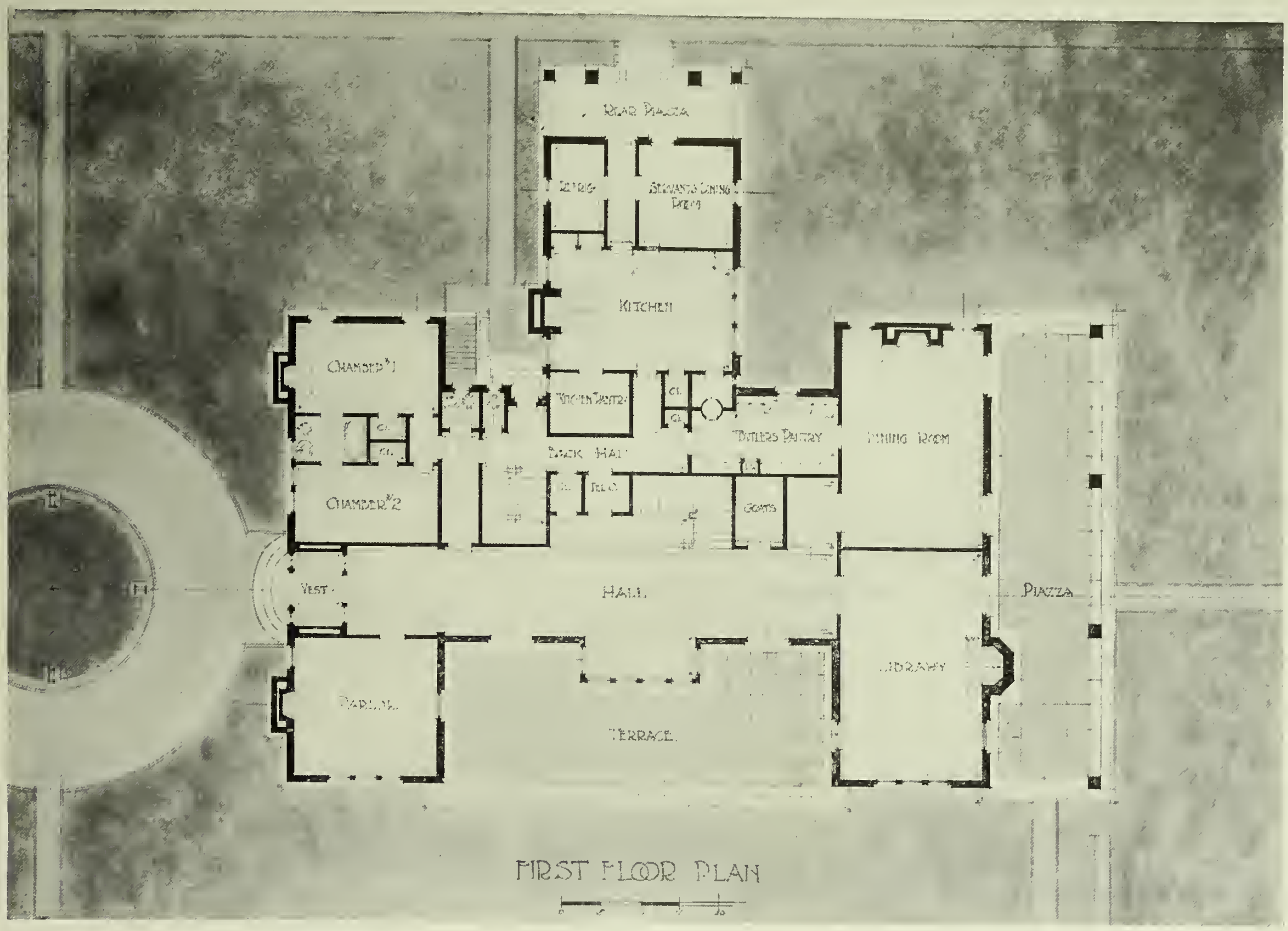


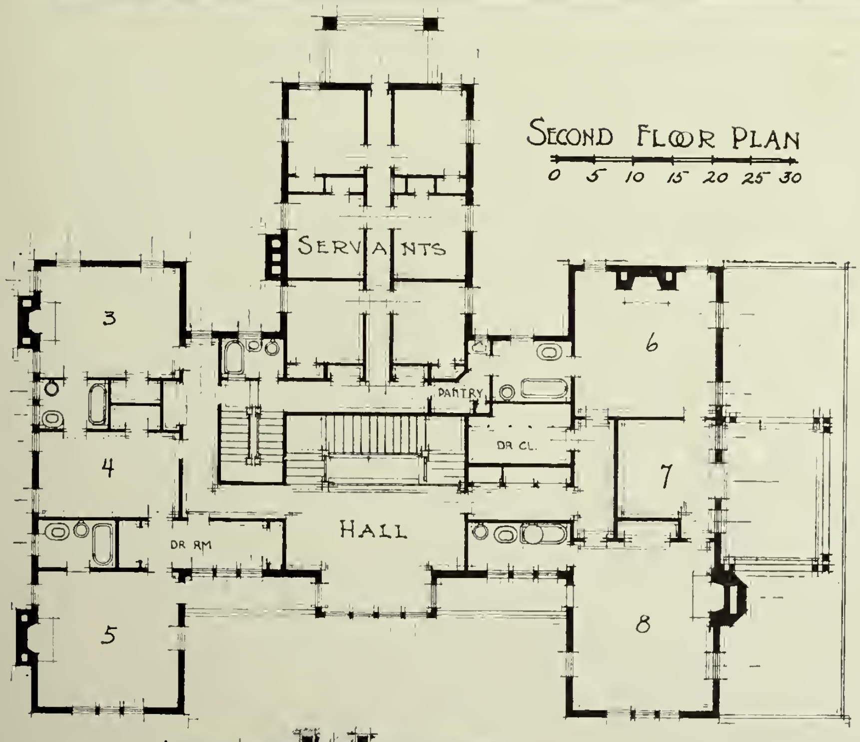
SECOND FLOOR

HOUSE AT SALEM, MASS.
WILLIAM G. RANTOUL, ARCHITECT.

HOUSE AND GARDEN AT MARION, MASS.
PAGE & FROTHINGHAM, ARCHITECTS.

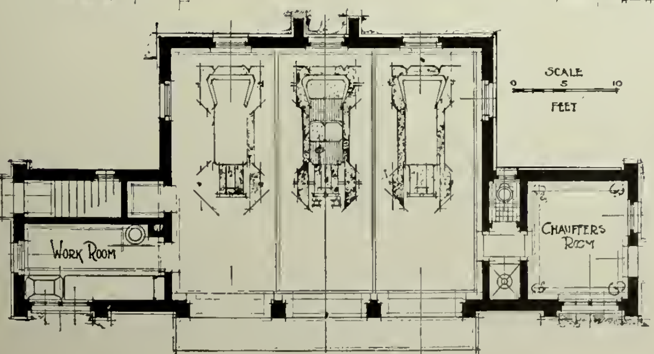
HOUSE AND GARDEN AT MARION, MASS.
PAGE & FROTHINGHAM, ARCHITECTS.



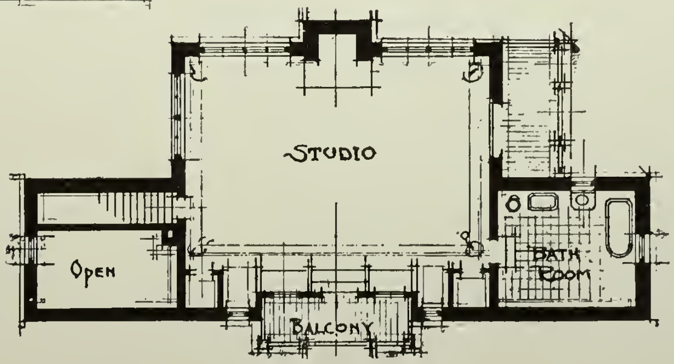


FIRST AND SECOND FLOOR PLANS OF HOUSE AND FIRST AND SECOND FLOOR PLANS OF GARAGE, HOUSE AT MARION, MASS.

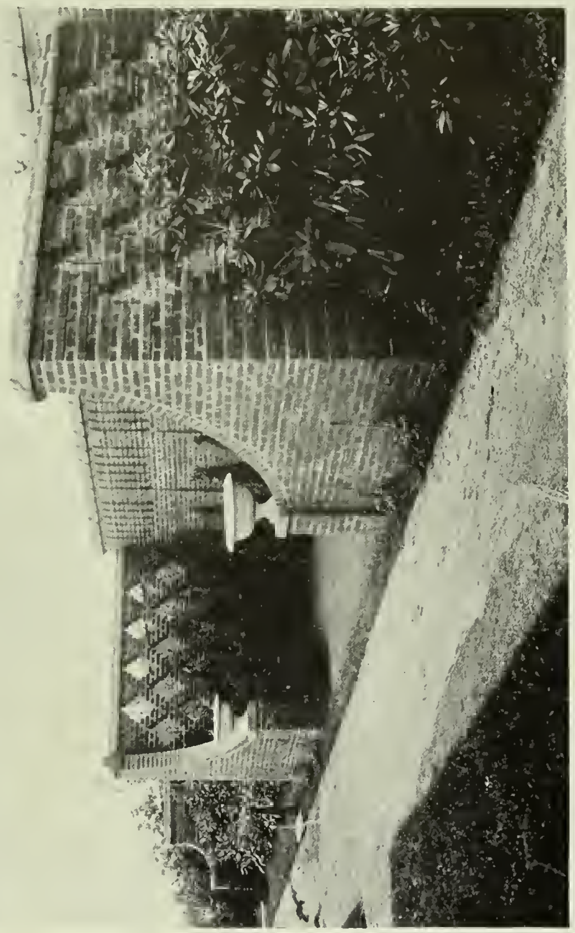
PAGE & FROTHINGHAM, ARCHITECTS

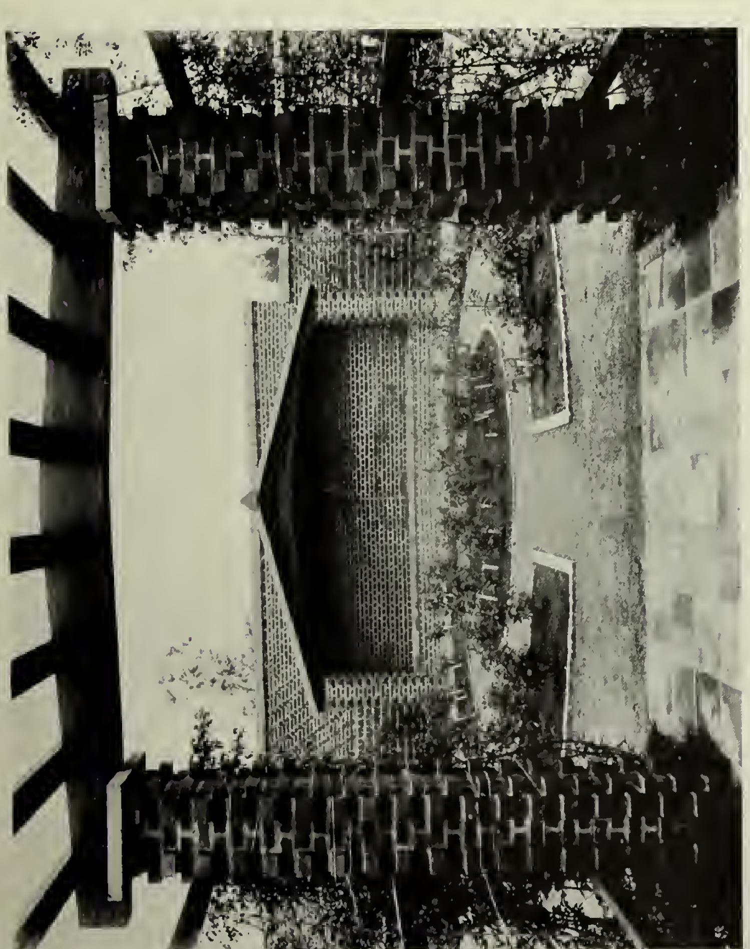


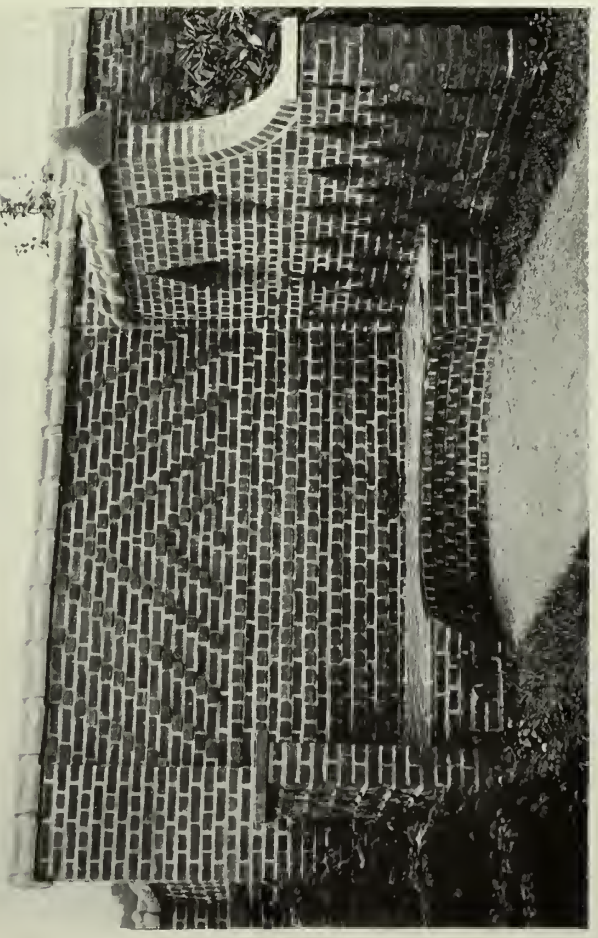
FIRST FLOOR PLAN.



SECOND FLOOR PLAN.







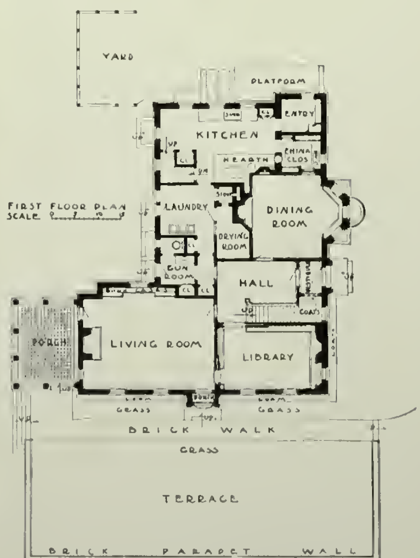
GARDEN DETAILS, HOUSE AT MARION, MASS.

PAGE & FROTHINGHAM, ARCHITECTS.

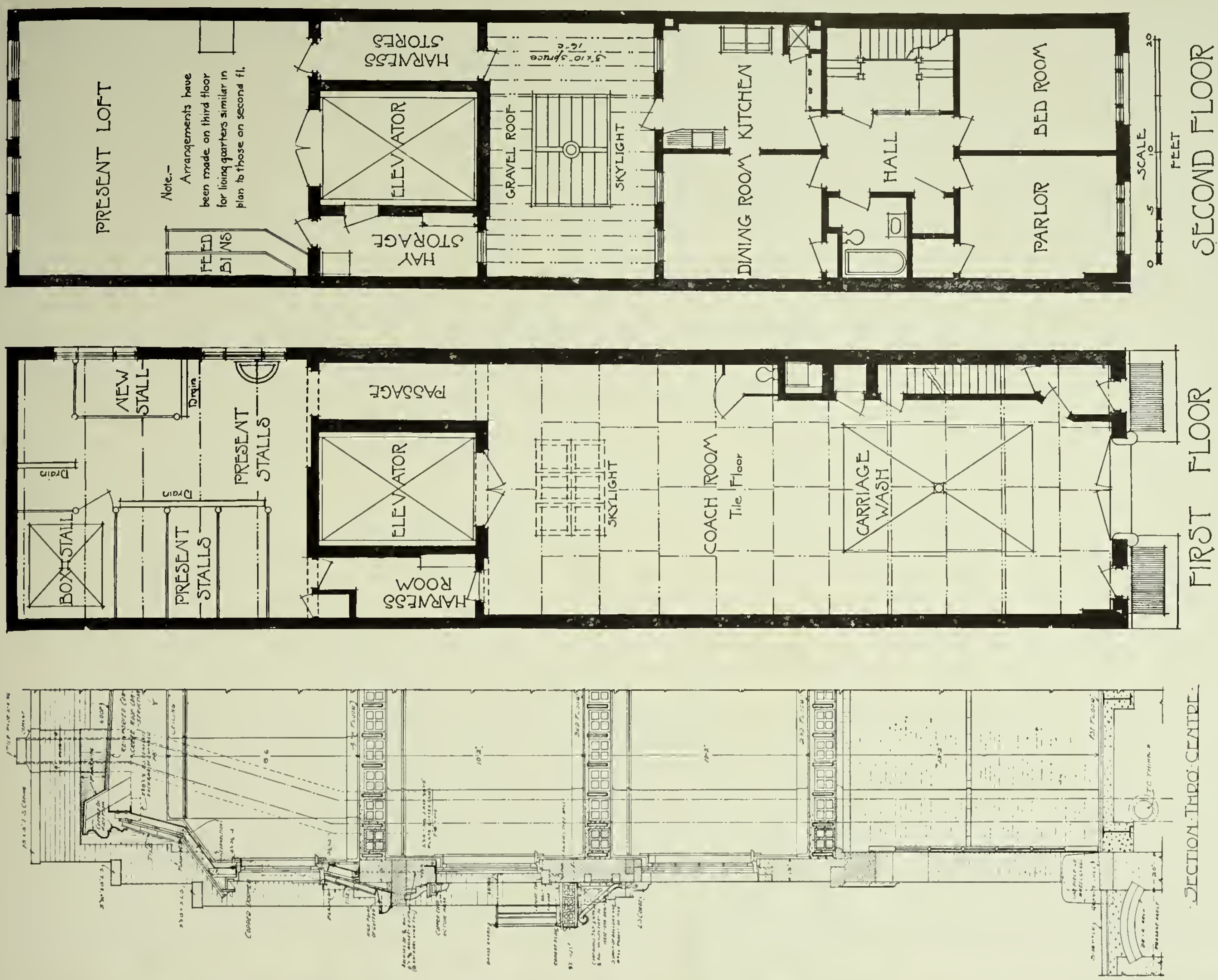
SERVICE ENTRANCE TO HOUSE.

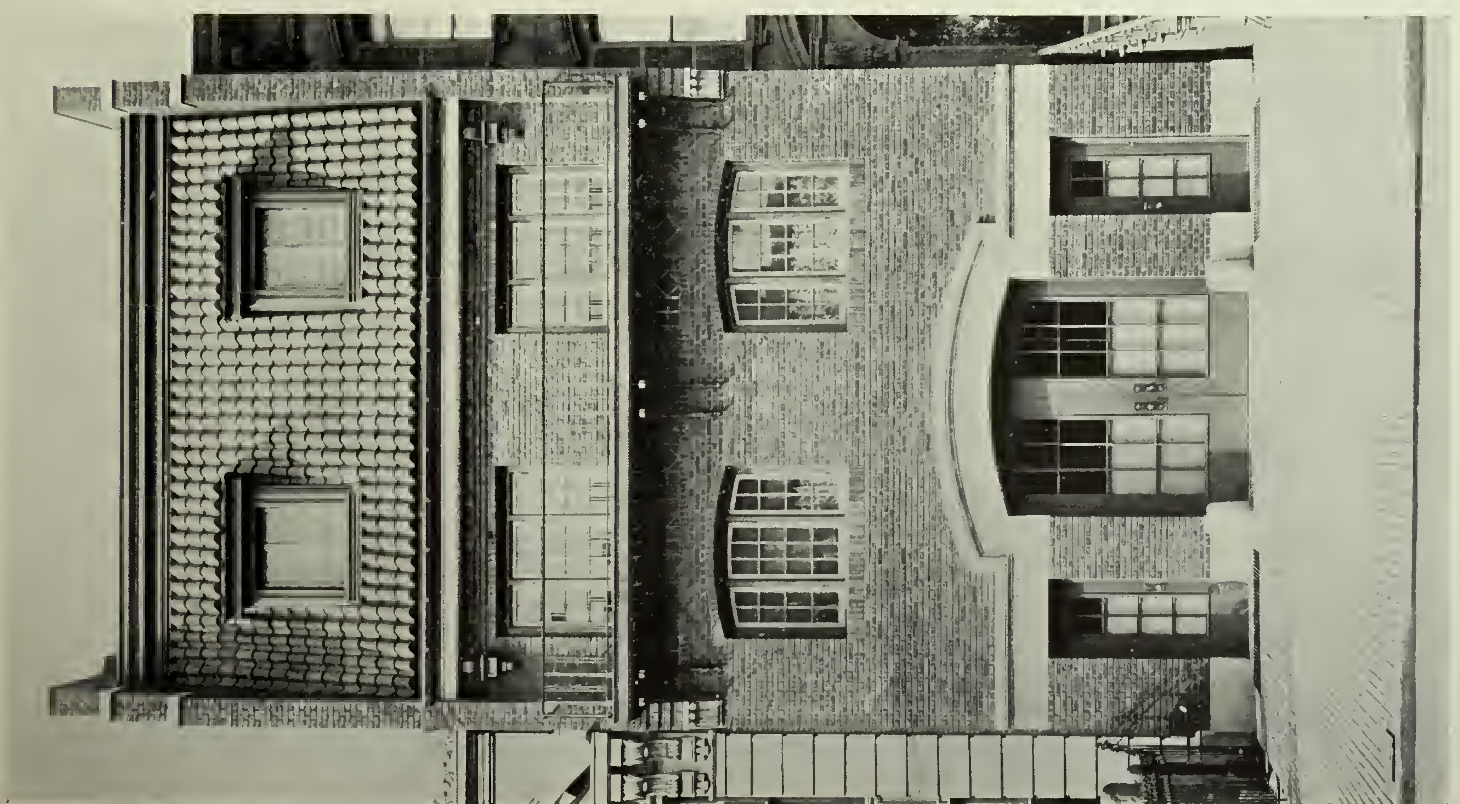
MAIN ENTRANCE, GARDEN SIDE.

ENTRANCES AND GARAGE, HOUSE AT MARION, MASS.
PAGE & FROTHINGHAM, ARCHITECTS



HOUSE AT CONCORD, MASS.
JOHN W LAVALLE, ARCHITECT.





STABLE AND GARAGE, 146 E. 57TH STREET, NEW YORK CITY.
ALBERT MORTON GRAY, ARCHITECT.

A Chronology of English Brickwork.

SOME months ago, in the journal of the London Architectural Association, there appeared a prize essay by Mr. H. F. Murrell on "The Development of English Brickwork." The matter, as published, would occupy too much space to be included in these pages, but as it is a valuable contribution to the subject, and is likely to be of interest to readers of THE BRICKBUILDER, an abstract is here given. This abstract, it will be seen, is arranged in chronological order, and is supplemented by a series of photographs, illustrating the succeeding phases of English brickwork.

ROMAN BRICKWORK.

B.C. 55-*A.D.* 420. Brick burning and brick building do not appear to have been practised in England prior to the Roman occupation, although existing remains show that the art of pottery was not unknown. In pre-Roman times the forests of Britain formed the happy hunting-grounds of a people whose building needs and ideals were doubtless satisfied by wattle and daub.

WEST DOORWAY, CHURCH OF HOLY TRINITY, COLCHESTER.

On the Roman advent systematized civilization took the place of Celtic disorder. As surely as he fortified his camp and leveled his military road, so surely the Roman introduced the brick-concrete construction which he had already designed for universal service from the Euphrates to the Forth.

That Roman brick-making in England was not confined to the typical flat 2-inch brick tile is evidenced by the remains of roof-tiles preserved in Colchester Museum. These consist of carefully-made channel and bonnet tiles, having finely-cast antifixa with anthemion at the bottom.

The remains of Roman brick-building in England are in no way different from those in other parts of the Empire. There are examples at most of the Southern Chesters of the two methods of employing brick construction; *structura cæmenticia*, a mass of rubble concrete faced in stone, with bonding courses of two or three flat tile bricks, and *opus testaceum*, in which the facing and arch work of the structure is brick. That the Romans had no predilection for brick is evident from the Tyne and Solway wall, essentially a stone structure; yet brick has been found as far north as Perthshire.

The most important British-Roman brickwork is to be found at Dover in the Pharos Tower and at St. Mary-in-the-Castle. In the walls of the former are the usual bonding courses of flat bricks, some of which have ledges for keying purposes. The Jewry wall at Leicester which is about 7 feet thick is built of rough rag-stone and large flat bricks, having fine arches about 14 feet high with double rows of large bricks, which radiate from the center and are bonded by a course laid tangentially to the arch. Richborough, Kent, has walls faced with courses of stone and brick alternately; while some portions of the walls and bastions still remain at Colchester, in Essex.

SAXON BRICKWORK.

A.D. 420-1066. A sudden cessation of scientific construction followed the withdrawal of the Roman troops. Reasonably, it might have been expected that a country familiar for three hundred years with Roman methods and surrounded in all likelihood with magnificent examples of its success would have striven to continue the work, at least for a time. But facts prove otherwise and to the unrest and upheaval, consequent upon the departure of the Romans and the arrival of the Saxons, may be attributed the failure of post-Roman builders to appreciate the basilica, the thermæ, and the villas as other than yards of ready-made building material. With an ignorant and unappreciative vandalism the Saxons misused the Roman material, often building into their arches tapered Roman voussoir bricks upside down; instances of which occur at Brixworth and at Britford, near Salisbury.

Saxon obtuseness is also noticeable at St. Pancras Church, Canterbury, where Roman triangular facing bricks are set with their points outwards. Amongst other instances of Roman bricks built into Saxon churches may be mentioned St. Martin's, Canterbury, which is a very early example, and St. Peter's-on-the-Wall, Essex. The Church of Holy Trinity, Colchester, possesses a fine late Saxon tower showing throughout a consistently intelligent use of Roman bricks adapted to essentially Saxon forms. The west doorway might be claimed as the reasonable initial of English brick development, had its tiles been burnt in Anglo-Saxon kilns.

NORMAN BRICKWORK.

RUINS OF NAVE, ST. BOTOLPH'S PRIORY, COLCHESTER.

Norman builders, having acquired a developed masonry amongst the fine French building stones, introduced into England a stone tradition for church and castle to be maintained throughout the ages of romantic faith. Yet the Norman, if given Roman bricks as at Colchester, could put them together with far more skill and interest than his Saxon predecessor.

1078. *Colchester Castle.* Largely composed of Roman brick, the fine herringbone band in the courtyard shows how simply this walling, built often with difficulty by the Saxons in stone, could be constructed by the Normans with tiles. The circular newel stair, which is the largest in England, 16 feet in diameter, has its soffit formed of one continuous barrel vault springing from newel to wall, with its brick voussoirs tangential to the sweep of the stair. The Colchester stair vault appears to have been the prolific parent from which were evolved the spiral brick stairs of the fifteenth and sixteenth centuries.

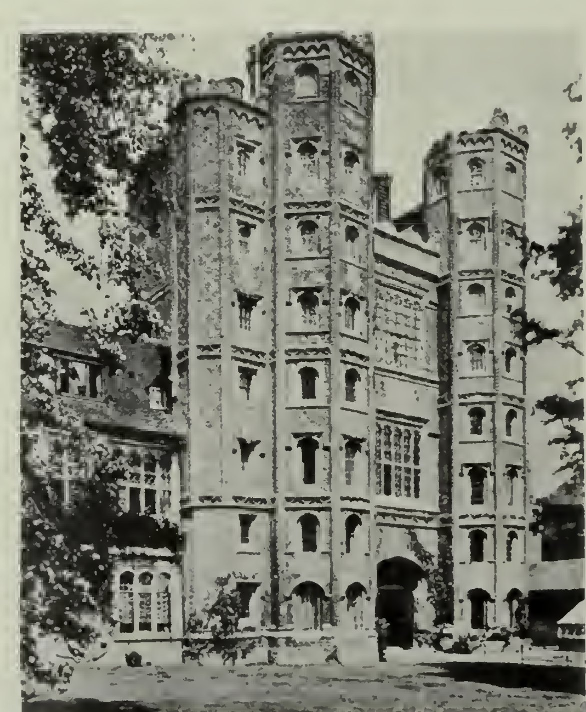
DETAIL OF CHURCH OF ST. MARY-THE-VIRGIN, INGATESTONE.

1116. — *St. Botolph's Priory, Colchester.* These ruins show an ingenious and thorough use by the Normans of Roman brick in columns, arches and arcading. The columns, about 6 feet in diameter, are carefully built in rubble masonry with alternate layers of brickwork, and projecting courses for the abacus and necking of capitals. The arches throughout are of brick, generally in two reveals.

EARLY ENGLISH BRICKWORK.

Evidence will not justify the assertion that no bricks were burnt in England from the time of the Roman evacuation in the year 420 till 1260 the date of the construction of Little Wenham Hall in Suffolk, but it is certain that brick-making as an industry and brick-building as an art did not exist during that period. Shortage in quantity or inferiority of quality in local building stone was met by the early English builders, not by recourse to Roman brick-fields but by importation of Caen stone from France.

It is evident that the first cause for the re-use of brick was the growing scarcity not only of stone but of timber. The constant destruction of timber buildings by fire must also have hastened the introduction of a more resisting material. This movement manifested itself first in the eastern counties.



LAYER MARNEY TOWER, ESSEX.

1260.—*Little Wenham Hall, Suffolk.* This structure has been long considered the earliest remaining record of the movement already mentioned. Here bricks averaging 9¾ inches by 4¾ inches by 2¼ inches, now dull in color were mixed with courses of stone and flint in the general walling.

1290.— *St. Nicholas Chapel, Coggeshall.* This was the earliest attempt at brick architecture proper. The jambs, mullions and lancet arches of its windows are all of brick, while internally the splayed jambs are finished with moulded bricks at the corners. It would appear likely, however, that the almost isolated examples of Little Wenham Hall and Coggeshall are but the survivors of a considerable group of early brick buildings long since demolished.

DETAIL OF RYE HOUSE, HERTFORDSHIRE.

1400–1500.— *Church Work.* Although throughout the eastern and southern counties churches may be found with brick walls and facings of the fifteenth century yet it was in Essex that brick church architecture mainly developed. But even in Essex the remains are few, including some fine towers, a porch here and an arcade there. The Church of St. Mary-the-Virgin at Ingatestone, in Essex, has perhaps the most imposing fifteenth-century brick tower in the country. The west tower window has brick tracery, and above it are effective crosses in vitrified headers. In addition to the Church of Chignall, St. Nicholas six miles north of Chelmsford, which must also be cited as an excellent example of English brickwork, there are fine brick towers to be noted at Billericay and Castle Hedingham, and brick porches at Burnham-on-Crouch, Castle Hedingham and Pebmarsh.

Brick churches in other parts of the country are less frequent. Granby Church, Nottinghamshire, has an east end in well-moulded brick, while the brickwork of Old Basing Church, Hampshire, is remarkable for its fine color. North Wootten Church near Lynn has also a fifteenth-century brick tower.

Early Tudor Brickwork.

Although the use of brick in church building was fragmentary and incidental, in house work its possibilities were grasped and a style developed which is the most typical of English domestic methods. In cottages and smaller houses brick was early discovered to be a suitable filling for half-timber framing. A fine example is West Stow Hall, Suffolk, where every pattern of brick bonding seems to have been exploited.

Another characteristic of Tudor brickwork is the introduction of diaper patterns, originating in the accidental effects of vitrified headers. In Tudor times the door and window openings were finished in stone except when the more convinced brick builder, by constructing his arches, mullions, and transoms in brick, gave to his work the satisfaction of completeness in one material. Square-headed windows, though not uncommon, seem to have been a difficulty prior to the use of flat-headed arches with radiating voussoirs, a trick to become in Georgian times the *motif* of a style.

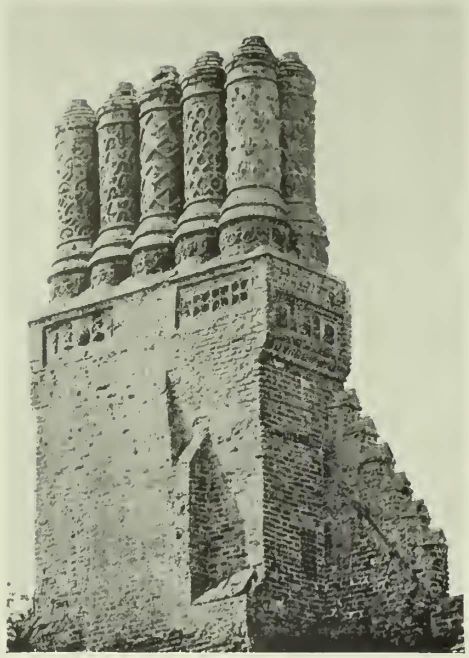
Corbelling is a marked feature of Tudor brickwork. It

SOUTH FRONT, EAST BARSHAM MANOR HOUSE.

retained a strong Gothic tradition till well into the sixteenth century, as at Layer Marney, in Essex, and was at its finest in such early work as the Rye House, Hertfordshire.

The chimneys are also a great feature. They were a comparatively new thought to the early Tudor architect. To quite a late date smoke had blackened the rafters of the great Gothic halls ; but when their convenience came to be generally appreciated and the Tudor builders had given careful thought to their treatment, then the most beautiful chimney stacks were produced. Innumerable patterns of cut and moulded brickwork were adopted; such in particular as those at Hampton Court Palace. With the death of Henry VIII., the elaboration of chimneys ceased, those of Elizabeth's time having straight stalks, and an oversailing cap of thin bricks.

The brick newel stairs of the period form an interesting study. They are associated mainly with the early defensive houses before the prominence given to the upper floors in Elizabethan times demanded a more spacious stairway. In their vaulting the constructive ingenuity and originality of their builders, in solving a difficult problem, is exhibited. In the typical stair of Waynflete's Tower at Esher Place, Surrey, which was built about 1500 the newel, vault, handrail and treads are brick throughout.



CHIMNEY STACK, EAST BARSHAM, NORFOLK.

1425. — *Tattershall Castle, Lincolnshire.* According to George Edmund Street, this is "the earliest example of the free use of moulded bricks in a noble architectural work." It contains unusually fine brick vaulting in its passages and stairs.

1440. — *Hurstmonceux Castle, Sussex.* This is essentially a defensive house entirely faced in brick, with the great corbels of its fine machicolated parapet spanned by brick arches. Internally it has several brick spiral stairs.

1440. — *Eton College.* In part this building was commenced in the reign of Henry VI. It is diapered externally and has very fine chimneys.

1440. — *Rye House, Hertfordshire.* Henry VI. granted a license to erect this castellated house (famous for the scene of the well-known conspiracy). Of the original brick building the gatehouse alone remains. The oriels, corbelling, newel stair, and chimney are its chief features.

1440. — *Nether Hall, Essex.* This Hall is of the same period as the Rye House, with which it is reputed to be connected by a secret passage. Unfortunately again the gatehouse alone remains, but from this it is evident that in quality its work was never excelled by the best brick builders of

OXBURGH HALL, NORFOLK.

GREAT SNORING RECTORY, NORFOLK.

East Anglia. Its bricks are burnt hard and in parts almost to a glaze. The construction of the great moulded brick arches spanning from turret to turret is in strong contrast to the fine corbelling with trefoil heads.

1480. — *The Bishop's Palace, Hatfield.* The wall surface of this structure is treated in especially fine diaper work.

1482.—*Oxburgh Hall, Norfolk.* This Hall, while as defensive in arrangement as Hurstmonceux, is treated entirely and architecturally in brick, alike in the great arch across the moat bridge and in the vaulted and ribbed entrance passage beyond.

1490. — *Gainsborough Old Hall, Lincolnshire.* Here is a very fine example of brickwork, partly erected in the reign of Henry VII.

1500. — *Queen's College, Cambridge.* This is another fine example of about the same period as the Gainsborough Hall. The gateway with its towers is particularly noteworthy.

Late Tudor Brickwork.

Almost with the turn of the century a new movement was manifested. With the reigns of Henry VII. and Henry VIII., characterized by great domestic building activity, the new Renaissance note with a foreign tone was struck in all the more famous mansions. With brick architecture approaching its climax foreign influence became more felt, and a new material was demanded which would be more in harmony with the general brick walling than stone. Hence resulted a new development in English clay art — the introduction of terra cotta.

1500-1525. — *Layer Marney Tower, Essex.* The most famous brick mansion in England. It well illustrates the tendencies just mentioned. As at Oxburgh Hall, it has a great entrance arch, Tudor windows, brick corbelling and diaper, but its parapet and center windows are of terra cotta, and Renaissance in detail.

1500-1515. — *Wolterton Manor-house, East Barsham, Norfolk.* If not the most famous this is the most perfect brick house in England, and was commenced in the reign of Henry VII. A panel or a head every here and there suggest the new detail, but the general ornament is pure Tudor Gothic. Chimneys and turrets, parapets and strings, blaze with brick heraldry.

1520. — *Great Snoring Rectory, Norfolk.* This Rectory was originally a manor-house, located about a mile from East Barsham. Its terra cotta, in which the interest chiefly lies, is very similar in color and material but the detail shows considerably more Italian feeling.

1515-1520.— *Hampton Court Palace, Middlesex.* This magnificent palace was erected by Cardinal Wolsey and presented by him to Henry VIII. A considerable proportion of the original Tudor Building was demolished by William III. to make way for the new State apartments by Sir Christopher Wren, but there is still a great deal of old brickwork remaining particularly in the Clock Court.

SUTTON PLACE, GUILDFORD, SURREY.

1523-1525.—*Sutton Place, Guildford, Surrey.* The building was one of the great houses of the period of Henry VIII. It shows an unusual mixture of the Perpendicular and the Italian manner in its ornament. In no way defensive and the newel stair discarded, the entire building is an elaborate study in moulded clay.

Nonesuch Palace, Surrey. Although nothing now remains of this palace, it appears from records to have expressed in brick and terra cotta all the energetic exuberance of Henry VIII.

Little Leigh's Priory, near Chelmsford, Essex. This Priory was built by the Solicitor-General to Henry VIII. It is notable not only for the excellent brickwork of the L-planned portion remaining, but more especially for its magnificent detached gatehouse.

The gatehouse situated at Hadleigh, Suffolk, is very similar.

Renaissance Brickwork.

Geographically, the use of brick during the Renaissance period was more widespread than during the Tudor, the center of interest passing from the Eastern to the Southern and South-Midland counties.

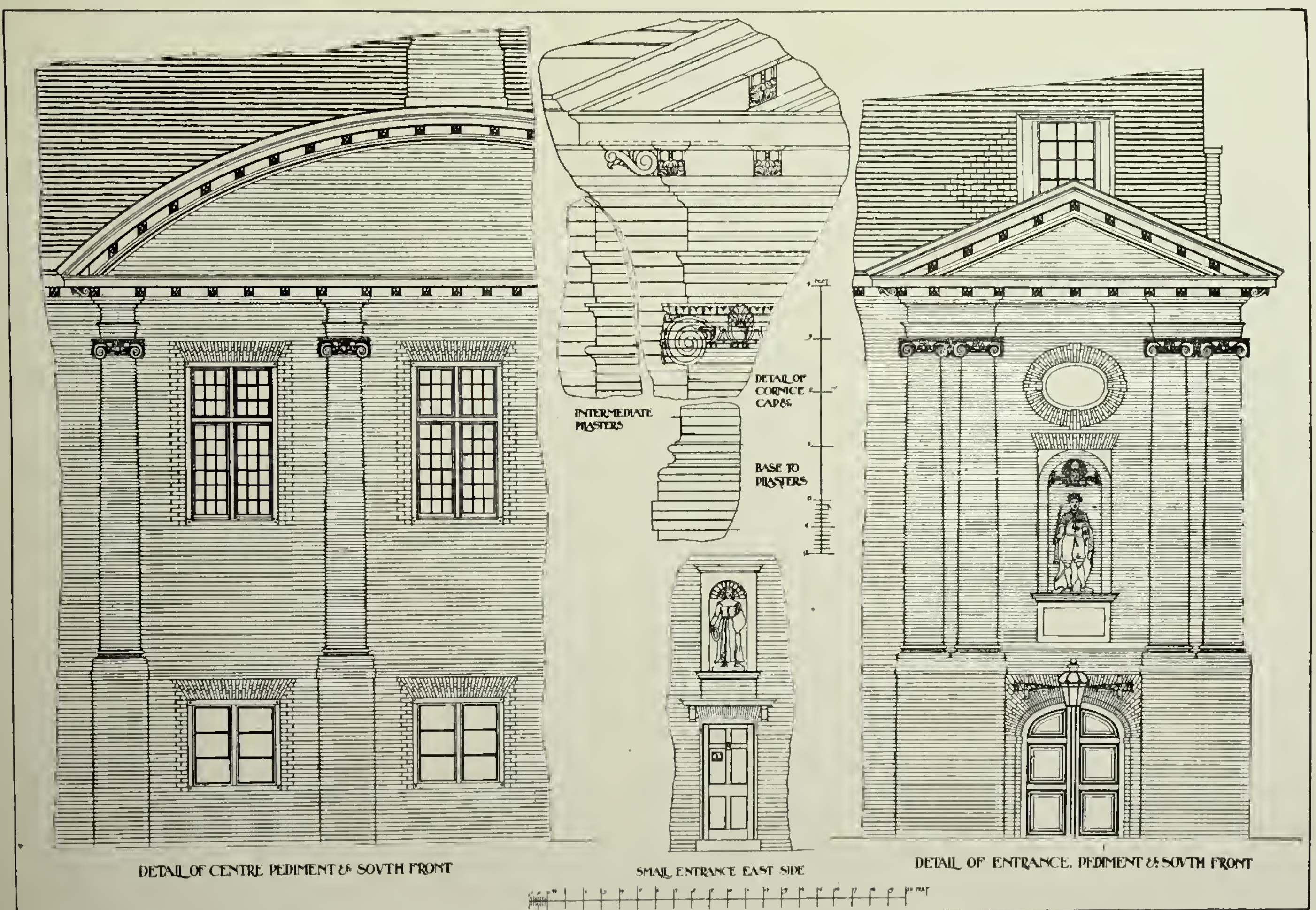
The most characteristic feature of Renaissance brickwork was the flat rubbed brick arch. The wider openings, as gateways, were spanned with elliptical arches. In brick as in stone the Orders formed the great decorative resource of Renaissance architects. Heavy classic cornices were built up of 2½-inch bricks often with dentils and modillions, tiles being used in the early work for the smaller fillets. Effective strings were formed of three or four courses of brick, slightly projected.

LITTLE LEIGHS PRIORY, ESSEX.

1538. — *Hengrave Hall, Suffolk.* Commenced late in the reign of Henry VIII., this building indicates the first change of importance towards Renaissance examples. Brick is employed throughout for facing work but stone takes its place for all architectural features.

Circa 1600.—Hatfield House at Hertfordshire, Bramshill House at Hampshire, Burton Agnes Manor-house at Yorkshire, Aston Hall at Warwickshire, and not a few of the Cambridge colleges belong to the early Renaissance period. They are largely faced with brick but stone is used for all ornamental portions, the chimneys alone showing an architectural use of brick. Dutch influence, especially in gables, becomes more noticeable in the early part of the seventeenth century; the introduction of Flemish bond about this time being significant.

1604. — *Kew Palace.* An early illustration of the Dutch



DETAILS OF CHRIST'S HOSPITAL.

BANQUETING HALL, KENSINGTON PALACE.

KEW PALACE.

influence. The windows have projecting architraves of 2-inch rubbers, with every third course sunk as a rustication. The cornices and projections are covered with tiles — which is always an early indication.

There is also a suggestion of Flemish influence in Pendell House, Bletchingly, which has been attributed to Inigo Jones. It has curiously-shaped arches over the ground-floor windows, and exceedingly interesting chimneys.

Jacobean brick mansions are by no means rare but the brick revival, destined to continue until the beginning of the nineteenth century, did not become general until the latter half of the seventeenth.

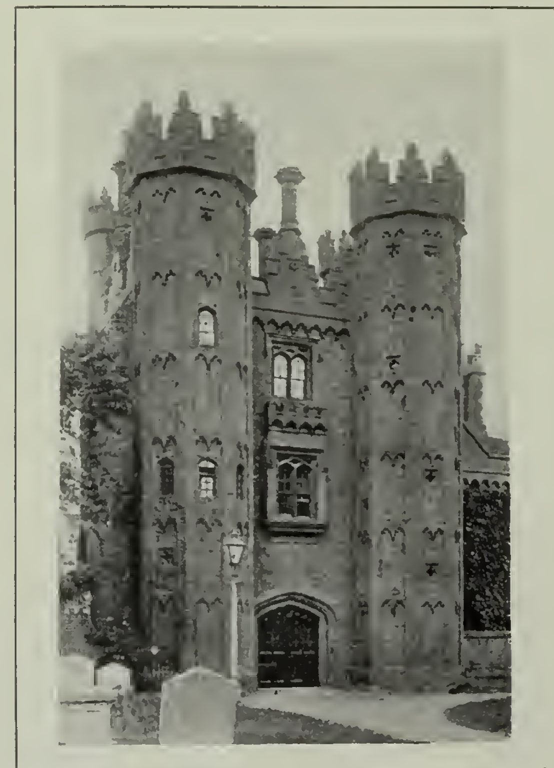
HAMPTON COURT PALACE.

1630. — *Inigo Jones' Brickwork.* Inigo Jones, like his master Palladio, was by no means averse to brick though using it little in his more important works. West Woodhay Manor-house, an apparently authentic design by Inigo Jones, shows an early use of rubbed brick in its window architraves. In Raynhall Hall, Norfolk, and Chilham Castle he employed brick for facing only, while Stoke Park shows it used in rather a Palladian manner for pilasters. St. Paul's Church, Covent Garden, London, was probably the first use of brick in Renaissance church building in England. The fine brick house at Tyttenhanger, Hertfordshire, has been attributed to Inigo Jones but its date and character appear to be somewhat later.

Wren's Brickwork. Wren's use of brick is characteristic of his natural strength and decision. For church work he evidently preferred stone, employing brick only for constructive utility as in the cone of St. Paul's Cathedral, or for an economical facing as at St. James', Piccadilly, London. In domestic work he used brick indiscriminately considering it to be as suitable for the palace as for a terrace house. He appears to have carefully considered the color of his brickwork, and for almost the first time introduced yellow stocks. The quality of Wren's brickwork was as excellent as his design.

1672. — *Christ's Hospital, London.* Designed by Wren. Among the rather unusual features of this design were the cut and rubbed brick Ionic pilasters and capitals. The building was demolished about six years ago.

1682. — *Chelsea Hospital and Kensington Palace, London.* Designed by Wren. These structures rely largely for effect upon the fine color of the red and yellow brickwork. The famous banqueting hall of the latter indicates close sympathy with brickwork combined with knowledge of its limitations. Protected portions, as the heads of niches, are beautifully formed in brick. The slightly-recessed arches on the ends are a surface decoration, easy and effective in brick.



GATEHOUSE AT HADLEIGH, SUFFOLK.

1688. — *The Bluecoat School, Westminster.* This is perhaps the most careful and consistent of Wren's brick-building.

Here the pilasters, capitals, and cornices are of cut brick similar to his other buildings.

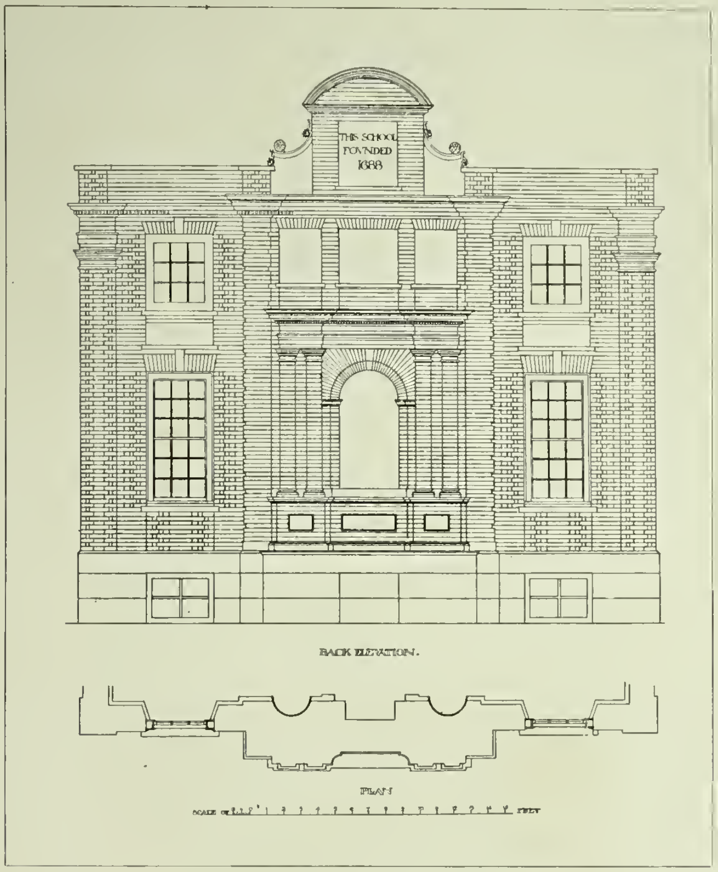
At Hampton Court Palace Wren used his color broadly, contrasting an ordinary dull red in the lower story with the bright red of rubbed and gauged brick above.

Eighteenth-Century Brickwork.

The brick style initiated by Inigo Jones at West Woodhay and popularized by Wren became the vernacular for the whole of the eighteenth century. For Queen Anne and Georgian alike, brick was the medium in which were expressed the comfort and dignity of the English house.

Of town houses the finest examples of the period remaining in London are Nos. 42, 43 and 44 St. Martin's Lane. In No. 43 the Roman Doric Order is rendered completely in brick from the fluted pilasters to the guttæ on the soffit of the cornice. No. 44 has a correct Ionic cornice with dentils, and No. 42 an enriched Corinthian cornice with modillions — all in brick.

The climax of Renaissance brickwork was followed by a decline, hastened by general introduction of stucco in the late eighteenth century. This militated not only against the artistic value of brickwork, but also against its constructional quality. Not a few of the bulging walls of to-day may be attributed to the careless brickwork of the age of Nash.



THE BLUECOAT SCHOOL, WESTMINSTER.

Nineteenth-Century Brickwork.

The revivals of the nineteenth century induced from necessity a renewed vigor of brick practice. Impelled by economic considerations to build in brick the great Gothic Revivalists employed that material with architectural enthusiasm for all but their most important works. Pugin by the inclusion in his "Examples" of such buildings as Oxburgh, East Barsham and Great Snoring stimulated the movement. Butterfield did pioneer work in brick at All Saints' Church Margaret Street, London.

Nesfield produced some beautiful brick lodges at Regent's Park and Kew Gardens; and Street, with his literary research in Northern Italy and practical work, continued the movement in a score of churches.

The possibilities of glazed bricks seem first to have been attempted by Butterfield, as in the interior of All Saints' Church.

Of the brickwork that has been done in England since the Gothic Revival it is impossible now to give a survey, as apart from the invidiousness of differentiating between the work of living architects, the task would occupy too much space. Suffice to say that brickwork, especially for domestic buildings, is being very extensively used by English architects with notable success in many cases. It has attained its present position of general usefulness by its ready adaptability to requirements, and whatever method of construction may determine the course of urban architecture in the future, brick is likely to remain the building material most suited to express the amenities of English country life.

LODGE IN KEW GARDENS.

DOORWAY IN THE CLOSE, SALISBURY.

THE recent excavations of the Roman Villa at Northfleet, England, have proven of immeasurable value to the antiquarian student. Among other important discoveries has been found the existence of an ancient ruin about two feet below the foundations of the present structure. Another valuable "find" is a large kiln built entirely of blocks of chalk lined with red clay, burnt through the process of firing to red brick. Buildings erected wholly or partly of blocks of chalk are to be found in the chalk district dating back to the Norman period, or even earlier, and Roman kilns built partly of chalk are comparatively common. This new kiln is uncommon, on account of both its material and its size.

Editorial Comment and Miscellany.

PLATE ILLUSTRATIONS — DESCRIPTION.

Stable and Garage at 146 East 57th Street, New York City. Plate 114. The building is faced with brick, laid in Dutch bond with wide joints raked out. The general tone of the brickwork is a deep purplish red. The roof tile is of a dull green. The coach room, lofts and repair shop are all accessible for vehicles by means of a 10 foot by 16 foot electric lift of 4500 pounds' capacity in a fireproof shaft. The floor of the stable is of clinker brick, the coach room of gray flint tile, and the living apartments and stairs composition with 6 inch cove base. Beneath the sidewalk of clinker brick is storage accommodation for gasoline, etc. The cost of the building per cubic foot was 28 cents. In cubing the distance was taken from the cellar floor level to the top of the roof surfaces and from the outside of walls, not including parapet walls and sidewalk.

Harrington Children's Hospital, Buffalo. N. Y. Plate 101. The building is of fireproof construction throughout. Upon the interior the halls and toilet rooms have marble floors and wainscoting. The stairs are also of marble. Each ward is equipped with outside verandas. The building contains approximately 200,000 cubic feet, the cubage being taken from the foundations to the top of the roof. The total cost was $50,000, or 25 cents per cubic foot.

SEAL OF MIAMI UNIVERSITY, OXFORD, OHIO.
Frank L. Packard, Architect.
Executed in faience by the Rookwood Pottery Company.

COLOR IN ARCHITECTURE.

THE value of color in architecture is the subject of a discourse by Halsey Ricardo, F.R.I.B.A., England. Mr. Ricardo believes that man should employ color in buildings since nature colors all her works. He refers to the Egyptians, Greeks, Persians and Assyrians, as well as mediæval nations, who enriched their buildings and monuments with color. Such examples he thinks should inspire the designer to works of art that will furnish a sense of pleasure, interest and added value to what might otherwise be commonplace.

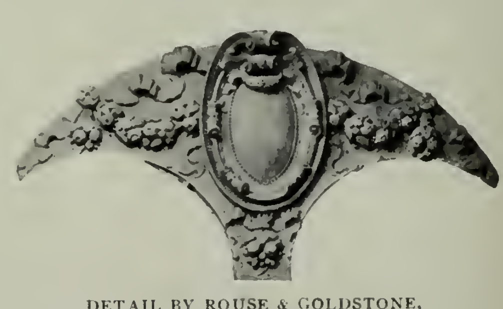
DETAIL BY CROW, LEWIS & WICKENHOEFER, ARCHITECTS.
Made by Conkling-Armstrong Terra Cotta Co.

The subject divides itself into Structural Decoration and Decorated Construction. Structural Decoration is the use of such materials as have in themselves the color required for decorating the buildings as works of architecture; while Decorated Construction refers to the application of colored decoration. He goes on to cite Notre Dame of Paris; Sancta Sophia, Constantinople; S. Miniato, Florence; and St. Mark's at Venice as notable examples of decoration. Mr. Ricardo is a strong advocate of Structural Decoration. He claims that the glazed materials are alone able to withstand the corrosion of the atmosphere and avoid the permanent disfiguration of its impurities. He states that while glazed bricks and glazed terra cotta lose the mellowing effect of time and weather, they are impervious to both rain and wind, always clean, and have an endless variety of color.

After discussing briefly the stained glass work in which the primary colors were chiefly used, Mr. Ricardo completes his discourse by saying: "Had nature applied but one color to all objects they would have been indistinct in form as well as monotonous in aspect. We must appeal to experience and be indebted to the past for its wondrous works, if we expect to realize our ideals for the future; for color is essential to the completeness of any work of architecture, as distinguished from simple buildings, even if only its aim is to please."

COMPETITION FOR A NEW CAPITAL.

A GREAT town-planning competition will be announced before long by the High Commissioner for the Commonwealth of Australia, who is almost ready to go ahead with the construction of the new federal capital. This has been located at Yass-Canberra, in New South Wales, about equally distant from Sidney and Melbourne and one hundred miles inland. Here a tract of some nine hundred square miles has been turned over to the Commonwealth, and engineers and surveyors have been busy for some time



DETAIL BY ROUSE & GOLDSTONE, ARCHITECTS.
South Amboy Terra Cotta Company, Makers.

DETAIL BY JAMES KNOX TAYLOR, ARCHITECT.
Made by O. W. Ketcham Terra Cotta Works.

obtaining topographical data relating to it, for the purpose of the proposed international competition. One feature of the undertaking is unusual; the land cannot be sold but can only be obtained on lease from the federal government. Consequently, while the administration buildings must inevitably be constructed by the government, there is considerable uncertainty regarding the way in which houses for the officials and members of parliament should be provided. This is the first occasion since the laying out of the City of Washington when a national capital has been presented to engineers and architects for complete planning. Moreover, this capital is for an entire continent, so that the competition has an unusually unique character. The site is apparently one which will call for great skill in its development, for a river winds through it and there are irregular, rather gentle hills everywhere. The river can be dammed in order to make a small lake, if desired, and on this account the variety of plans that may be prepared for the development of the site is very great. The authorities are apparently proceeding in a very careful manner, with the intention of leaving the design wholly to the competitors, furnishing merely topographical information and a statement of the accommodations needed by the government.—*Engineering Record.*

ANXIETY OVER THE ARCHITECTURE IN ROME.

CONSIDERABLE anxiety among all lovers of art has been aroused over some of the projects contemplated in Rome. In 1911 that city will celebrate the fiftieth anniversary of the proclamation of Rome as the capital of Italy. The committee in charge of affairs feel that they cannot carry out their elaborate plans without connecting the three buildings on Capitol Hill by two permanent additions. The piazza together with this group of buildings was designed by Michelangelo Buonarotti and has existed for centuries as a model of proportion and dignity. Michelangelo had very little space at his disposal, but he made the most of it by various devices, one of which was to leave two openings between the lateral and central buildings. To connect these would not only shut off all the openings towards the Forum and Palatine but would also affect materially the harmony of the original design. We hope this project will not be executed, for it will destroy the appearance of one of our historic creations and at the same time add fuel to the already large and insane desire of changing or demolishing the splendid architecture of the past.

DETAIL FOR AN OFFICE BUILDING.
Atlantic Terra Cotta Company, Makers.
Henry Ives Cobb, Architect.

MAIN ENTRANCE TO LIBERTY TOWER BUILDING, NEW YORK CITY.
Architectural Terra Cotta executed by Atlantic Terra Cotta Company.
Henry Ives Cobb, Architect.

THE UNIFICATION OF THE ARCHITECTS IN PENNSYLVANIA.

WE NOTE with interest the earnest effort being made to unify the architectural profession in the State of Pennsylvania. The Association of the American Institute of Architects in that state issued some time ago through its officers a circular letter asking for the co-operation of all the members of the association and of the profession. The letter called for assurances of interest in the organization and opinions as to the best methods of

DETAIL BY ROOT & SIEMENS, ARCHITECTS.
American Terra Cotta Company, Makers.

establishing the Pennsylvania State Association as a vital factor in the Commonwealth. Such a hearty response has come from all sections of the state requesting information as to the method of applying for admission that the association has been compelled to issue another circular letter in regard to this inquiry alone. There is no better way to have its influence felt as a power for good than the united and concentrated action of all the professional men that have expressed their desire to join the organization.

PITTSBURG'S BIG LAND SHOW.

ARRANGEMENTS are being made under the auspices of the Pittsburg *Gazette Times* and the Pittsburg *Chronicle Telegraph* for a big land show to be held in Pittsburg, October 27th to the 29th. The exhibition will be wide in its scope and will include among its contributors the United States Government, the various States of the Union, Boards of Trade, Chambers of Commerce, commercial bodies and irrigation companies. The object of the exposition is to provide information to the farmer, the homeseeker and the investor regarding land openings and developments in all sections of the country, and at the same time to teach the student and laymen the educational facts concerning land reclamation and irrigation. Samples will be shown of all mineral, agricultural, horticultural, and botanical products of the soil.

AN OPEN AIR PULPIT.

A WORK of unusual interest among architects as well as laymen is the open air pulpit that has been designed for Grace Church, New York City. This is the first experiment of this nature that has been undertaken in the United States. In Europe, however, these pulpits built on the outside of churches are very common, especially in Italy. At Perugia there is an open air pulpit attached to the side wall of the church, which may well be styled the prototype of this one belonging to Grace Church. The pulpit faces Broadway and is designed in white marble after the Gothic style of the fourteenth century. The base is ornamented with the symbols of the four Evangelists, while the parapet is adorned with the figures of the Evangelists. The panels are carved to represent the Sermon on the Mount.

DETAIL BY WARREN & WETMORE, ARCHITECTS.
New Jersey Terra Cotta Company, Makers.

BUILDING OPERATIONS FOR JULY.

OFFICIAL reports from fifty building centers throughout the country, compiled by The American Contractor, New York, show a loss in the aggregate of twenty-two per cent for July, 1910, as compared with July, 1909. Of this amount, New York city assumes nearly three-fourths, a decrease of nearly $15,000,000, or fifty-two per cent. The majority of the other cities in the list contributes their mite to make the total. Thirty-two cities show a loss of from two to seventy-six per cent, and eighteen cities show a gain of from two to one hundred and eighty-five per cent. The principal gains were made in Atlanta, one hundred and eighty-five per cent; Dallas, one hundred and twenty-eight; Duluth, forty-five; Hartford, one hundred and twenty-eight; Los Angeles, ninety-eight; Oklahoma City, ninety-five; St. Paul, forty-four.

DETAIL FOR PUBLIC SCHOOL, BROOKLYN.
Brick Terra Cotta & Tile Co., Makers.
C. B. J. Snyder, Architect.

THE city government of Paris is beginning to realize that it must beautify still more its streets and parks if it is to hold the distinction of being the most artistic city in Europe. They are voting $300,000,000 worth of bonds to carry out the Baron Haussman plan which was formulated during the reign of Napoleon III.

AWARD OF ARCHITECTURAL SCHOLARSHIP.

THE scholarship awarded every year to American students in architecture for a post-graduate course of study at the American Academy in Rome was won by Richard Haviland Smyth of Columbia University. Joseph M. Kellogg of Cornell was highly commended, and Samuel Hyman of Columbia and Harold D. Bounetheau of Boston received honorable mentions. The judges were William R. Mead, president of the academy; S. B. P. Trowbridge, John M. Carriere, Adolph A. Weidman and Francis C. Jones.

A JOINT RAILWAY TERMINAL IN MANHATTAN.

THE Dock Commissioner of New York City has submitted to the city government an elaborate plan for the creation of a joint railway terminal in Manhattan together with better facilities for the handling of transportation. The scheme contemplates a large expenditure for land, docks, an elevated railway structure, upper and lower terminals, floor space for warehouses and storage, buildings used by factories for the fabrication of raw materials, piers with train facilities on the first and second floors and recreation pavilions above, with private passageways from the steamers and car service. At the end of a certain period the terminal is to become the property of the city. The railroads are to pay rental for use of piers, terminals, tracks and float bridges together with light, heat and power. The rental of floor space above will establish a fund for future improvements. The enterprise, as planned, will cost approximately $100,000,000.

ENTRANCE TO CAFE AT DETROIT TREATED WITH HARTFORD FAIENCE TILE.

IN GENERAL.

Thorgils Thoresen has opened an office at 328 Mohawk Building, Portland, Ore., for the practice of architecture. Manufacturers' catalogues and samples desired.

The "Tapestry" brick used for the stable and garage at 146 East 57th street, New York, Albert Morton Gray, architect, was furnished by Fiske & Co., Inc.

DETAIL BY GOLDWIN STARRETT & VAN VLECK, ARCHITECTS.
New York Architectural Terra Cotta Company, Makers.

The architectural terra cotta used in the construction of the Children's Hospital, at Buffalo, Green & Wicks, architects, illustrated in this issue, was furnished by the Atlantic Terra Cotta Company.

The firm of C. A. Gill & Son, architects, Dallas, Texas, has been dissolved. C. A. Gill has been appointed supervising architect for Dallas. J. O. Gill, also of this firm, and S. C. Skielvig have formed a co-partnership with offices in the North Texas Building.

The Secretary of the Board of Education at Ionia, Mich., commenting recently on waterproof brick stains said that on all the buildings painted during the past few years Cabot's Brick Stain has proven satisfactory in every way, and is wearing in a thoroughly good manner.

MURAT TEMPLE, INDIANAPOLIS.
All the trim for this building of architectural terra cotta executed by the Indianapolis Terra Cotta Company.
D. A. Bohlen & Son, Architects.

The firm of Temple, Burrows & McLane, Davenport, Iowa, has been dissolved, C. D. McLane having with-

AUTOMOBILE SALES BUILDING, CHICAGO.
Curtain walls and mullions in dark green terra cotta, balance of building of light cream terra cotta. Northwestern Terra Cotta Company, Makers.
Holabird & Roche, Architects.

drawn. The practice of architecture will be continued by Seth J. Temple and Parke T. Burrows under the firm name of Temple & Burrows. Their office address will remain the same, 62-64 McManus Building.

The Atlantic Terra Cotta Company will furnish the architectural terra cotta for the following new buildings: Municipal Building, New York City, McKim, Mead & White, architects; Rector's Hotel, 44th street and Broadway, New York City, D. H. Burnham, architect; Queen Lane Filter Plant, Philadelphia, Pa.; St. Francis de Sales Church, Philadelphia, Pa., Henry D. Dagit, architect; High School, Norfolk, Va., Neff & Thompson, architects; the last two buildings mentioned will use a large amount of polychrome terra cotta.

NOTICE TO ARCHITECTS. (Competition.)

The Confederate Memorial Association has instructed its Executive Committee to receive Competitive plans for a memorial building in Richmond, Va., to be known as the "Confederate Memorial Institute." The Committee has engaged a firm of architects to act as expert advisers in the preparation and award of the competition.

Cost of building to be $150,000.
Prizes ranging from $1,000 to $200.

Architects desiring to compete should apply for conditions of competition on or before September 30, 1910, to Hon. J. Taylor Ellyson, President Confederate Memorial Association, Richmond, Virginia.

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AN ARCHITECTVRAL MONTHLY

VOL. 19

SEPTEMBER 1910

NO. 9

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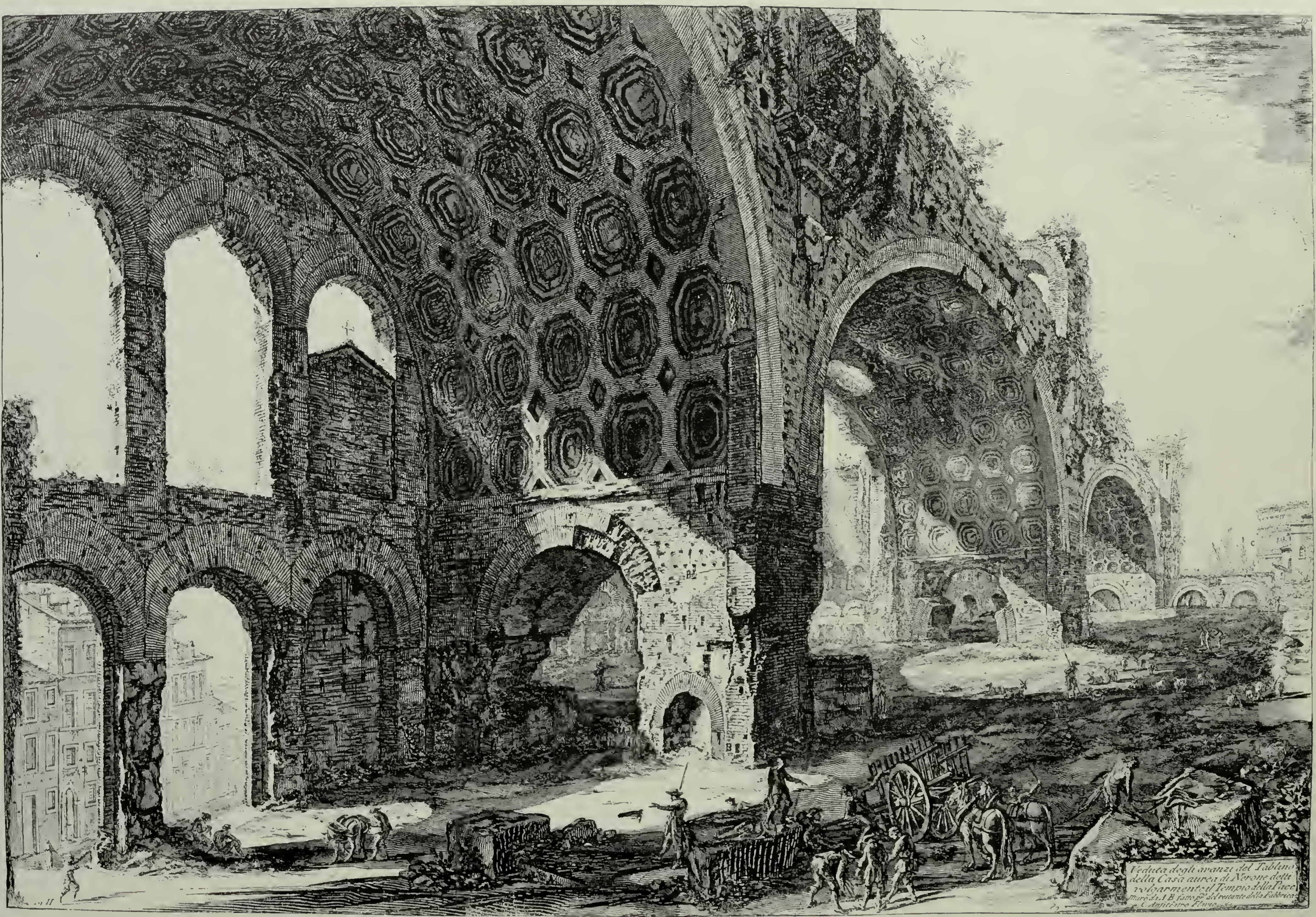
CARRÈRE & HASTINGS; CLINTON & RUSSELL; FRANK MILES DAY & BRO.; FRANK B MEADE; WILLIAM HART TAYLOR & SON; WILDER & WHITE.

LETTERPRESS



THE BASILICA OF CONSTANTINE, NEAR THE FORUM, ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

These ruins show the remains of a Basilica, or court of justice, completed by Constantine, the first Christian Roman Emperor (A.D. 306–337). This grandest and latest of the Imperial buildings of Rome follows the model or the great central rooms of the imperial baths, especially the baths of Diocletian (284-306) transformed by Michel Angelo into the church of Santa Maria degli Angeli. The three existing arches engraved by Piranesi represent only one-third of the original building, something like the aisle of a church. Each is 68 feet in span and 80 feet high. A corresponding set of arches existed to the right, while the huge central nave had vaulting of a span of 82 feet and a height of 114 feet.

THE BRICKBUILDER

VOL. XIX. NO. 9. SEPTEMBER, 1910.

Hints on Architectural Acoustics.

BY HUGH TALLANT.

PART II. (Continued).

Computation and Practice.

THE practice of architectural acoustics consists mainly in the elimination of defects. Positive results can be attained only by tentative methods and through successive modifications in design. In the case of a new building the preliminary sketches should first be laid out with a general view to acoustic as well as architectural requirements. The exact conditions at critical points can then be investigated by the methods already described.* Should defects be discovered the drawings may be amended to suit; the acoustics again tested; further corrections made; and the process repeated until the results prove satisfactory. In the case of an old building the problem is simplified to the extent that the shortcomings are already in evidence, but the requisite alterations must usually be studied out on paper by the same tentative methods before they can safely be put in execution.

The most dangerous defects are *insufficient or excessive loudness; indistinctness due to interrupted reverberation; indistinctness due to sound-interference; echo;* and *insufficient or excessive reverberation.* We will begin by showing how this somewhat formidable array may be overcome by alterations in shape, materials, contents and arrangement. The treatment of special sizes and types of auditorium will then readily follow.

The question of loudness seldom arises in connection with a small auditorium. Where there is no difficulty in addressing the furthest members of an audience there is no excuse for shouting at the nearest. On the other hand, there are few auditoriums over 80 feet in depth where the sound is not as much too loud at some points as it is too faint at others. In a music hall or opera house the seats next the orchestra are usually worthless, and in the average theatre much of the illusion is lost to the occupants of the front rows, who cannot help perceiving that the actors are speaking far above a normal tone of voice.

It is not in the nature of things that the sound should be quite so loud at the rear of an auditorium as at the extreme front; nevertheless the discrepancy may be largely neutralized by the following expedient. Let Fig. 14 represent the plan of a rectangular auditorium, all of whose dimensions are over 50 feet. The initial loudness in the vicinity of the speaker, S, is largely accentuated by sounds deflected along the paths BC, DE, FG, etc. If, however, the angles YZW and XYZ be cut off by walls running in the directions MN and OP, these same sounds will now be deflected along the paths B′C′, D′E′, F′G′, etc.; and will thus be transferred from the front and centre of the auditorium to the sides and rear, with benefit to both. The procedure may be carried even farther. It will be noticed in the diagram that B′C′, D′E′, etc., have a tendency to radiate. This divergence corresponds roughly to the spread of the sound-wave. The greater the distance between the paths, the fainter the sound. But if the deflecting walls MN and OP be curved, as shown in Fig. 15, the divergence of the sound-paths and the consequent diminution in loudness will be largely prevented. Of course the same principle applies to the angle between the ceiling and the front wall, which may be cut off with similar advantage, as shown in Fig. 16.

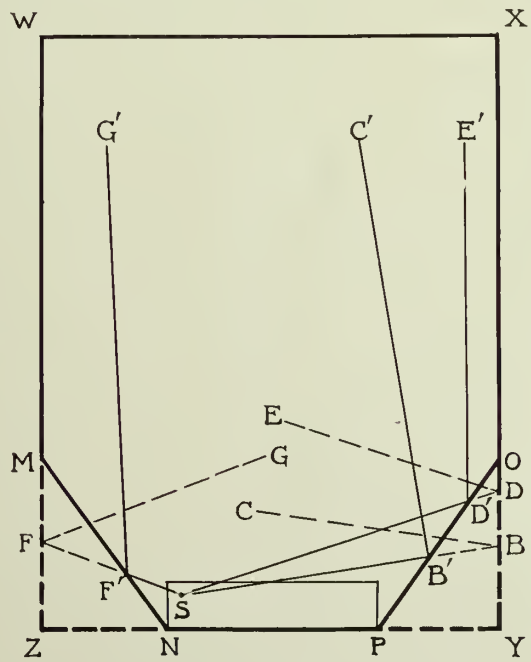


Fig. XIV

The same expedient may be used to advantage in another way. It has already been mentioned† that, in a theatre, the first deflected sound is apt to reach the hearer at so long an interval after the direct sound as to cause indistinctness. Even in other types of auditorium the first few sounds often arrive with such irregularity as to occasion similar trouble. The difficulty usually

* See The Brickbuilder for July and August, 1910.

† See The Brickbuilder for July, 1910, page 158.

arises when the speaker is located on the same side of the house as the hearer. This fact is illustrated in Fig. 17 where the speaker is supposed to be standing at S, while the hearer occupies an aisle seat at A_1. The principal

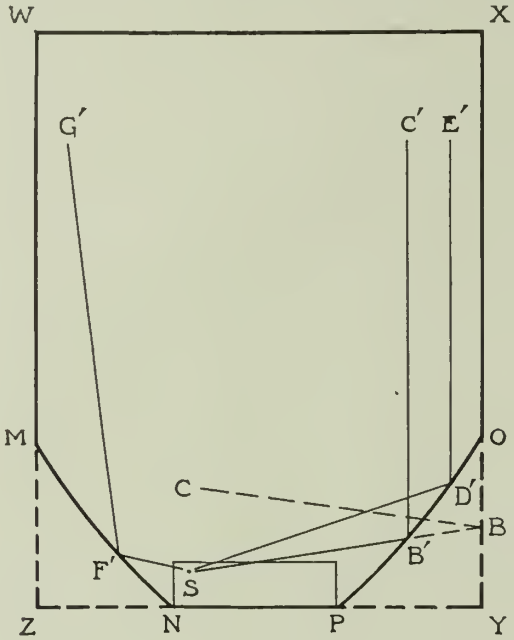


FIG XV

sound-paths arranged in order of actual (*not projected*) length, are SA_1, SB_1A_1, SC_1A_1, SD_1E_1A, $sf_1g_1a_1$, sQ_1a_1, SH_1A_1, $SK_1L_1A_1$, etc. Upon comparing each path with the next it will be found that up to $sf_1g_1a_1$, the successive increase in length is small and fairly uniform. Between this path and sQ_1a_1, however, the increase is so abrupt that in a large auditorium it may easily amount to over 70 feet. If similar tests are made at a_2, a_3, a_4, etc., it will be found that this sudden discrepancy in the lengths of the sound-paths has a tendency to diminish as the distance from S increases so that finally a point, a, will be reached where sQa is only

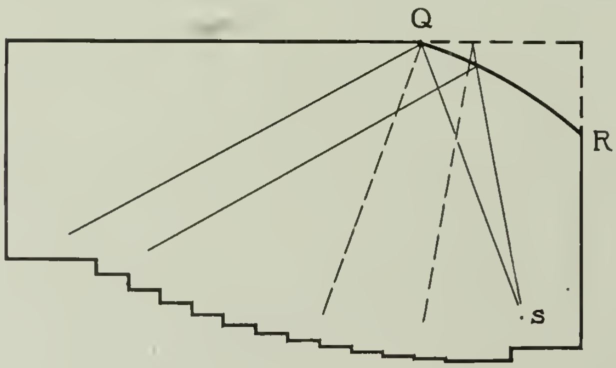


FIG. XVI

70 feet longer than $sfga$. It therefore appears that at all points from a to the rear of the auditorium the sounds follow one another so closely as to produce the effect of a continuous, and possibly agreeable, reverberation. On the other hand, at all points between a and the speaker there will occur a perceptible interval of time during which no sound will reach the hearer, and the effect of this break in the reverberation will be that familiar and disagreeable sensation of continually losing a syllable of the discourse.

The obvious remedy for this difficulty is to fill in the break in the reverberation with one or two additional sounds. As a rule, however, this is more easily said than done. Just how to introduce deflecting surfaces which will develop sound-paths of the precise length and direction required is a problem whose solution varies with the case in point, and often demands much architectural ingenuity. One expedient is to lower the ceiling at the front; but so radical an alteration is often prohibited by decorative or practical requirements. A large niche behind the speaker is sometimes efficacious. At best, the

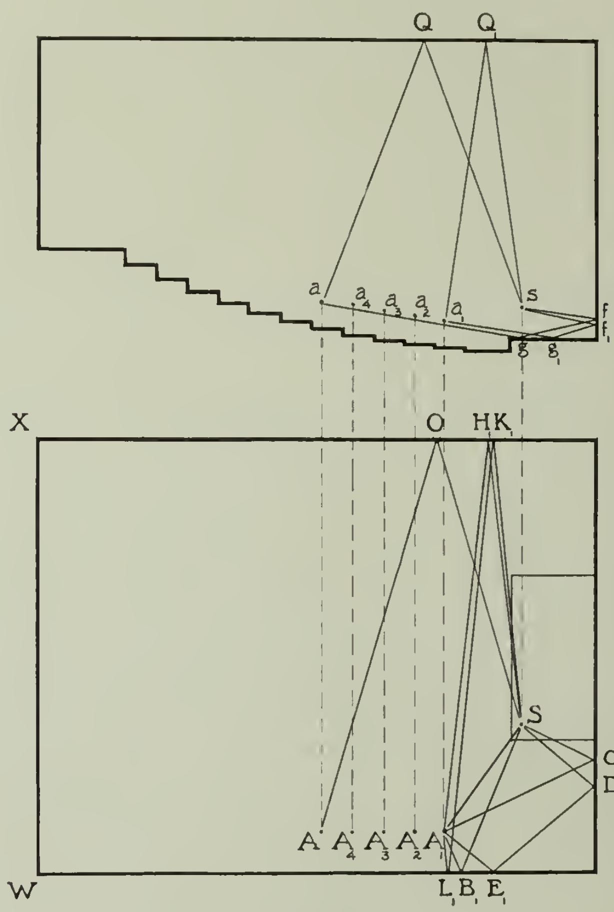


FIG. XVII

proposition is complicated to a degree, and the theoretic conditions difficult to express in architectural motives. A far better remedy — provided that the rear wall, WX, is an almost perfect sound-absorbent — is to pass deflecting surfaces through the points M, O and Q, as indicated in Figs. 15 and 16. It is sufficiently evident, without prolonging a tedious discussion, that this procedure will so alter all the longer sound-paths, such as SBC, Fig. 15, as to eliminate practically all the reverberation subsequent to the break, leaving the initial effect sharp and distinct. The same deflecting surfaces which are of such advantage in equalizing the loudness of the sound can thus be made to do additional duty in eliminating indistinctness. It is merely necessary to make them pass through M, O and Q. The precise inclination and curvature may then be adjusted so as to concentrate the sound wherever it is most urgently needed.

Contrary to what might be expected, the most distant point from the speaker is rarely the one where the sound is the faintest. Conditions at the back of the top gallery are usually very satisfactory, because the direct sound is reinforced by deflections from the ceiling as well as from the side and front walls. Many a gallery-god holds down a seat acoustically far superior to those for which his betters below have given up five times the money. The real danger-point occurs in the space underneath the balcony where the deflections from the ceiling cannot penetrate.

The contour of this sound-shadow can be readily plotted by the geometrical construction indicated in Fig. 18. It is merely necessary to draw *bc* perpendicular to *wx*, prolong it to *d*, making *cd* equal to *bc*, and draw *dcs* and *eba*. The point *a*, thus determined on the section, will be projected in plan at A. In this way any number of points on the edge of the shadow may be determined. The surfaces MN, OP and QR may then be adjusted so as to deflect as much sound as possible into the shadow. The starting points M, O and Q are, of course, already determined by considerations of distinctness. The exact positions of N and P are relatively unimportant, acoustically, and may be determined to suit decorative or practical requirements. There is, however, an advantage in placing R as low as possible in order that QR may concentrate its deflected sound as far back as possible under the overhang of the balcony, and for the same reason the inclination at R should be such as to deflect the sound in the direction R*f*, just escaping the edge of the balcony at *b* by a foot or so. This can be accomplished by making the inclination R*h* at R perpendicular to the bisectrice of the angle *s*R*f*. In the same way the sound from Q should be deflected in the direction Q*a* by making the inclination Q*k* at Q perpendicular to the bisectrice of *s*Q*a*. If the curvature of QR is now laid out tangent to R*h* at R and to Q*k* at Q the deflected sound will be largely concentrated between *f* and *a* — that is, as far back as possible under the balcony. A convenient and accurate method of accomplishing this result is to pass an ellipse through Q with one focus at *s* and the other focus at a point about a foot from the edge of the balcony. The intersection of this ellipse with the wall *xy* will determine the point R. All sounds from the focus *s* which strike the elliptical surface will, of course, be deflected through the other focus, from which they will be distributed almost uniformly between *a* and *f*. The position of R may be lowered if necessary by increasing the distance Q*x*.

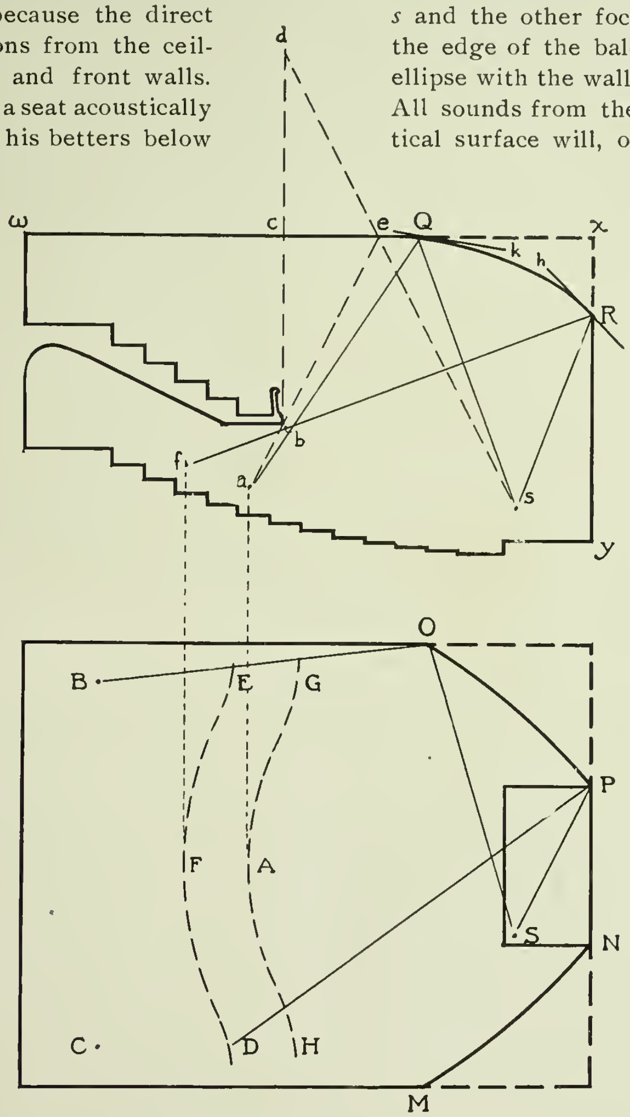


FIG. XVIII

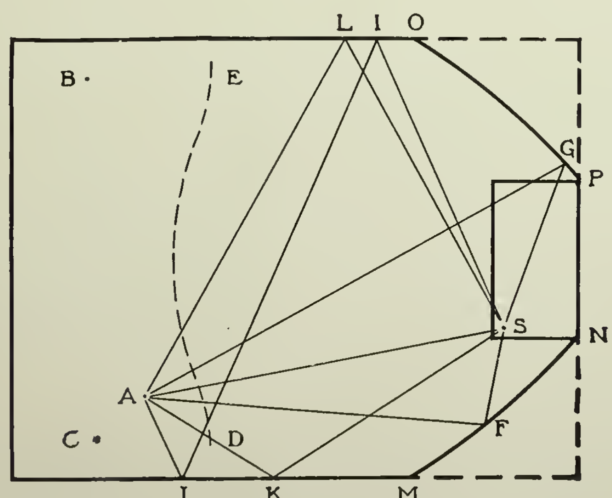


FIG. XIX

The deflections from MN and OP may now be utilized to strengthen the sound at points where the deflections from QR cannot penetrate. If the sound from QR is distributed in plan over the space DFEGAH the sound from OP should be distributed over the remainder of the sound-shadow, or between the two aisle seats B and D. Assuming that the speaker is placed at S, the most unfavorable position, the curvature of OP should be such that the tangent at P is perpendicular to the bisectrice of the angle SPD, and the tangent at O perpendicular to the bisectrice of SOB. By similar means the sound from MN may be concentrated between C and E. The net result will be that at any point, A, Fig. 19, within the zone of darkest shadow BCDE, the initial intensity of the sound will be made up of the following components:

One direct sound SA.

One deflected sound SFA.

One deflected sound SGA.

Two deflected sounds SKA and SLA.

SFA and SGA are each approximately as loud as SA because of the concentration caused by the curvature of MN and OP. SKA and SLA together aggregate something more than SA. The total intensity therefore amounts to at least four times that of the direct sound, and is amply sufficient up to a distance of 100 feet from the speaker. In this calculation the deflections from NP have been neglected because they are not always available; also such double deflections as SIJA, because they are apt

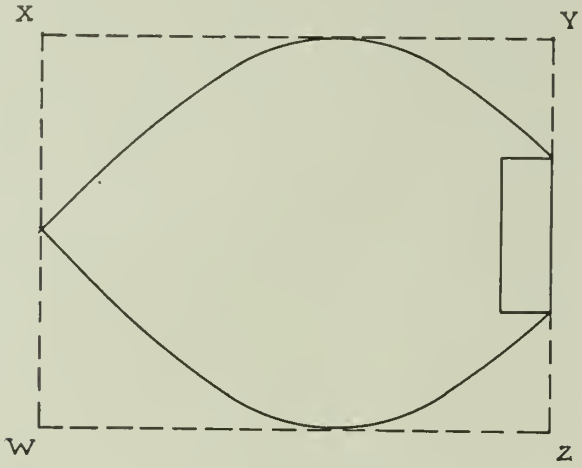


Fig. XX

to arrive more than a fifteenth of a second after the direct sound. Even with these deductions, however, it is possible to develop an initial intensity amply sufficient for any ordinary-sized auditorium. Where the depth is so great that the distance from the rear seats to the speaker is over 100 feet, it is usually understood that the volume of sound is to be equally exceptional. In a grand opera house, for instance, the orchestra is rarely composed of less than eighty or one hundred pieces, and the singers are expected to have voices of corresponding calibre.

Broadly considered, an auditorium constructed along

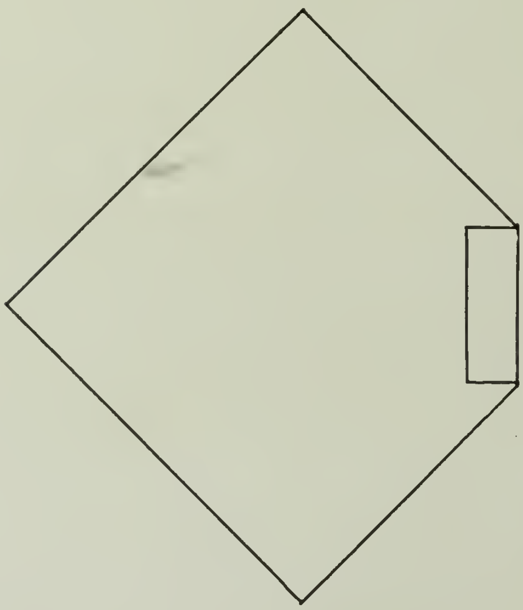


Fig. XXI

the lines above described simply amounts to a huge scientifically-shaped megaphone, so adjusted as to obviate indistinctness from interrupted reverberation and at the same time to distribute the deflected sound to the best possible advantage. There seems no obvious reason why the procedure should not be carried to its logical conclusion by cutting off the corners ZWX and WXY as shown in Fig. 20. The resulting elimination of the rear wall is in itself an excellent feature, tending largely to prevent sound-interference. Practically, such a shape appears extraordinary, but it may readily be approxi-

FIG. XXII.

mated in the case of a square auditorium by locating the rostrum in one corner, as shown in Fig. 21. This arrangement is not altogether ideal from the standpoint of either decoration or acoustics, but it often proves a valuable makeshift where conditions of economy prohibit elaboration of shape or material. It is admirably adapted to lecture halls of moderate size and unpretentious decoration, and possesses the additional advantage that the speaker commands his entire audience within an angle of 90°, and does not feel the irksome necessity of turning continually to right and left in order to address

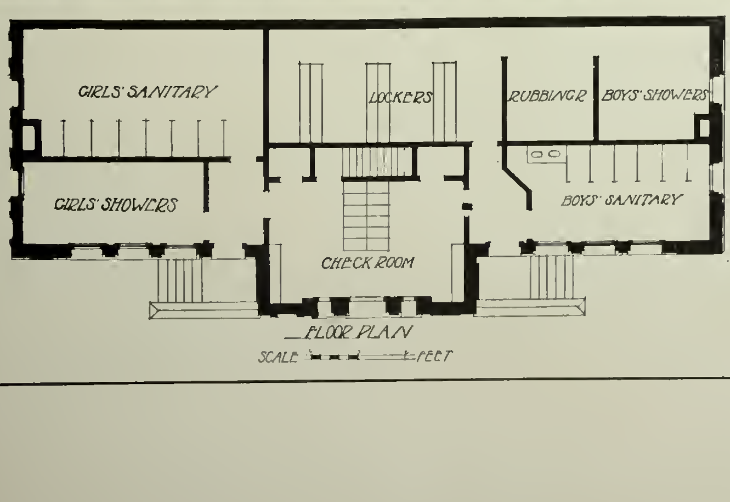
FIG. XXIII.

the occupants of the side seats. For larger auditoriums the shape indicated in Fig. 18 gives better acoustic results, and presents a more dignified architectural effect. The deflecting surfaces MN, OP and QR may be treated either as a conical penetration, a large niche, or as the pendentives of a shallow dome; in fact all these geometric forms may often be satisfactorily combined in a single design. In the New Amsterdam Theatre, for example, the proscenium, Fig. 22, was laid out on the principle of a cone penetrating a flattened dome. The penetration was filled in with a deflecting surface which the flattening of the dome caused to tilt inwards at the top, giving the inclination required for acoustic purposes. Two cylindrical penetrations at the sides left pendentives which when carried down to the floor, furnished deflecting surfaces corresponding very neatly to MN and OP in Fig. 18. A complete view of these deflecting surfaces as seen from below is given in Fig. 23.

New Sanitary Buildings in Boston.

THE problem of successfully designing an individual and unique sanitary building for municipal uses, one especially that is far removed from environments of natural beauty, seems to have been, up to quite recently, a matter not quite worthy of the architect's consideration, but one apparently more likely to be associated with the handiwork of the mechanically practical man whose main object appears to have been to produce a building that would answer the demands of the public from the utilitarian standpoint only. It would seem that the usually inelegant surroundings of a building of this class make it all the more vital that the building conform to the present-day conception of individual architecture. And, too, why should not the sanitary demand the same consideration of the architect as other municipal buildings — a police station, schoolhouse, or fire station ?

The accompanying illustrations of buildings that have been recently completed in Boston show advancement along ideal lines and remarkable improvements over many of our previously designed buildings of this class. The buildings give decidedly pleasing results, many new features and forms being introduced in the construction,



SANITARY BUILDING

AT

COLUMBUS AVENUE PLAYGROUND,

BOSTON, MASS.

Stickney & Austin, Architects.

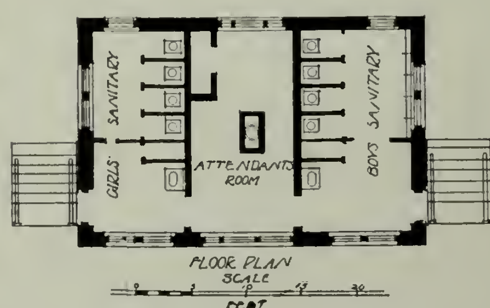
SANITARY BUILDING

AT

ASHMONT, BOSTON, MASS.

Stickney & Austin,

Architects.



SANITARY BUILDING

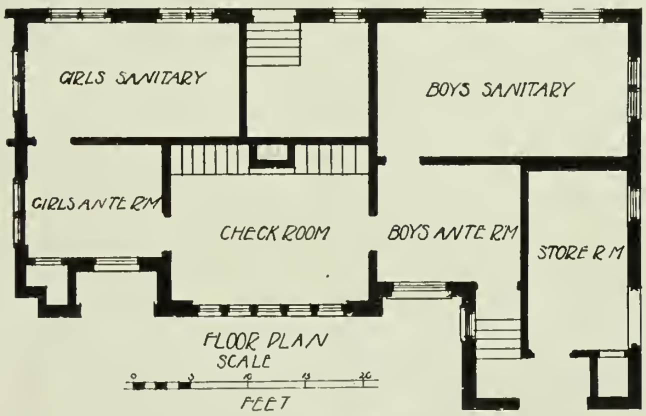
AT

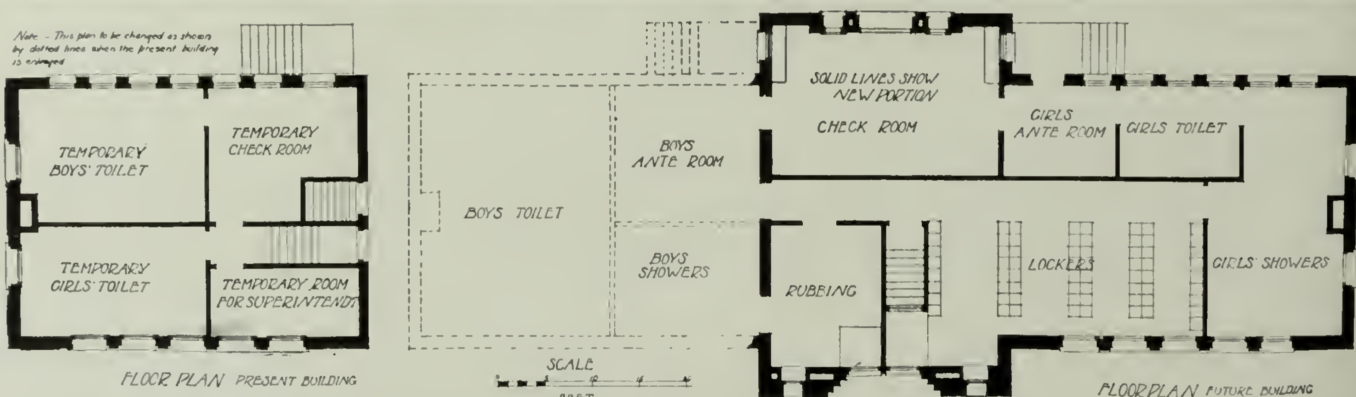
ROSLINDALE PLAYGROUND,

BOSTON, MASS.

Stickney & Austin,

Architects.





SANITARY BUILDING AT CHARLESTOWN PLAYGROUND, BOSTON, MASS.
Stickney & Austin, Architects.

chimneys, roofs, wall panels, and cleverly distributed window openings.

The Columbus Avenue building, the largest of the group, is perhaps the most successful. It has a long, low roof line, interestingly treated at either gable-hip end. On one end the brick and plaster chimney occurs. The front elevation has a large gable end bay which forms the entrance way. The gable has a good group of windows, but the semi-circular plaster arch over the windows is much too white, and has a tendency to strike a jarring note. The high brick screens on either side of the bay — hiding the entrance ways — are a decided improvement over the ordinary wood lattice affairs so commonly used.

The Sullivan Square building is much smaller and without the center bay, and has a shingle roof instead of tin. The wall treatment is similar as regards the brick patterns. The window composition is excellent.

Out in the suburban districts where a free and rambling effect seems appropriate, the architect has introduced a feature in the roofs which is a novelty in this locality. This feature, while not attempting to be an imitation, nevertheless reproduces in shingles the sentiment that is aroused by a thatched roof. The effect is obtained by ordinary boarding covered with shingles laid in uneven courses and rolled over the edges to the verge boards. The walls are laid simply and are without patterns or borders.

In these buildings the architect has achieved results esthetically good, and incidentally the total cost of each building has not been materially increased by the intrusion of this esthetic element into the problem.

Notes on Hospital Planning.

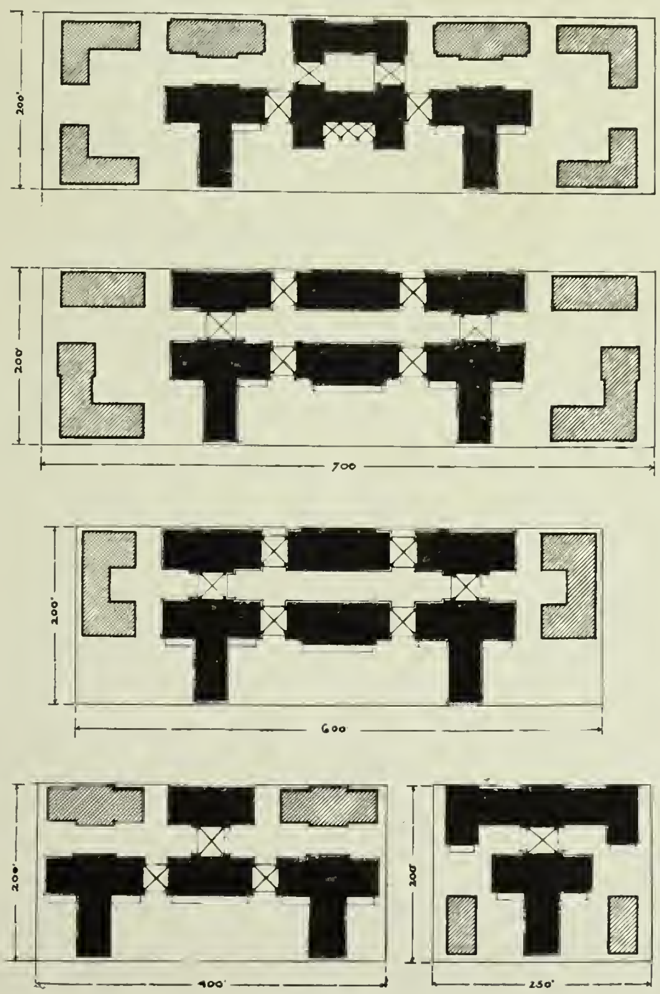
BY S. S. GOLDWATER, M.D.

Superintendent, Mount Sinai Hospital, N. Y., Consulting Supervisor of Construction to Bellevue Hospital, the Stamford Hospital, etc.

A Plan for the Construction of Ward Buildings in Crowded Cities.

AN ACCEPTABLE plan for the construction of ward buildings of many stories in crowded American cities has long been needed. Such a plan must satisfy the requirements of convenient administration, and must comply in all essentials with the demands of hygiene, even under the hard conditions of a restricted site and of possibly unfavorable surroundings. The ward plan which is the subject of this paper is presented as a contribution to the study of this problem.

It is assumed that economic necessity compels us, and will compel us indefinitely, to continue to house a majority of hospital patients in large wards. Those who are opposed to large wards and who propose to provide for each patient the particular environment best suited to his condition and needs, are no doubt correct in theory. A private room with a porch and a garden; a private nurse on day duty and another on night duty; a skilled medical officer, not too much distracted with administrative duties or with the care of other patients — all these combined represent a kind of hospital organization which is greatly to be desired, because in the long run it would yield the best results in the treatment of patients acutely ill. But the folly of subdividing wards into single rooms, while there is a lack of means to increase substantially the number of nurses, has been demonstrated to the satisfaction of more than one hospital superintendent, and to the serious discomfiture of patients in wards subdivided and understaffed.



TYPICAL BLOCK PLANS.
High buildings are solid. Low buildings are cross-hatched.

Nevertheless the necessity of a partial classification of patients within the typical medical or surgical ward group must be recognized, even if a complete and perfect classification is at present unattainable; this necessity is recognized in the accompanying ward plan, as it is in all ward plans which provide, among the appendages, a lounging and dining room for convalescents, an airing balcony or balconies, and one or more "recovery," isolating, or "quiet" rooms. The problem in ward planning is to bring together all of these helps to good nursing and proper care, in such a manner as to facilitate their supervision by the limited number of nurses at present available, and at the same time to avoid hemming in the ward itself in such a way as to interfere materially with its supply of light and air.

A hundred or more writers in the last decade have reviewed the history of hospital planning and have presented and commented upon the ward plans of representative hospitals in Europe and America. I shall, therefore, take for granted a knowledge of these plans and shall merely say that none of them, in my opinion — meritorious as many of them are, and admirable as some of them must be acknowledged to be — can be utilized in a wholly satisfactory way for the construction of a hospital of any considerable capacity on such sites as offer themselves, for example, on the island of Manhattan in the city of New York, where streets, running east and west, parallel each other at a distance of only 200 feet from north and south, and where most of these streets, from house-line to house-line, are only 60 feet in width. Within the limits of such a city block (and I confine myself to the rigorous demands of a typical Manhattan block, because while better sites, permitting greater freedom in planning, are often to be had in other cities, worse ones for the erection of a large general hospital cannot well be imagined), we are called upon to plan a hospital, the wards of which will be well lighted and surrounded by a suitable zone of aeration.

The modern hospital must be able to place its patients out of doors, whether in gardens or roof-wards or on loggias or balconies. Now since in crowded cities we cannot have gardens, and since roof-wards can only be utilized for a relatively small number of patients, the principal wards must have balconies; and these must be so placed as to be sun-warmed in winter, must be accessible for both bed-patients and convalescents, must lend themselves readily to constant supervision, and must be so arranged as neither to disfigure the building nor greatly to darken the wards. Besides this, the balconies must not be too close to the street.

It is essential also, on account of the rapidly increasing hospital needs of urban communities, that the ward plan shall be one which, if utilized at first for the construction of a four or five-story building, will permit us to superimpose new wards upon the old ones without detriment to the latter; and it is essential so to locate our ward buildings with relation to the other buildings of the hospital group, that these other buildings, in their turn, may be increased in height and doubled in capacity, if necessary, would carry us beyond the prescribed limits of this paper. For the present, therefore, I must content myself with calling attention to some of the important characteristics of the present plan, the comparative value of which will no doubt be made plain in the subsequent discussion of its merits and defects.

The use of the T-shaped ward building enables us to construct a full-sized ward of thirty-one beds (five of which are in "separation" rooms) within a space extending only 120 feet from north to south, or a ward of twenty-six beds within a space extending 106 feet from north to south. If we leave to the north of this an air-zone of 30 feet in the one case, or 44 feet in the other, there will be available for administration and service buildings, 50 feet along the line of the street which forms the northerly margin of a block extending 200 feet from north to south. If the ward appendages and main service corridor were

TYPICAL WARD PLANS FOR CHILDREN.

without any signal alteration in the hygienic character of the wards.

This is not all that is required by the conditions of our problem. If the ward buildings, fronting south, can be so placed as to face a park or an open lot, well and good; but inasmuch as such sites are not always available, and since empty lots do not always remain unoccupied, our plan must be one which will not lose much of its virtue if open ground on the opposite or south side of the street is not available, or if such open ground, present at the time of the construction of the hospital, is subsequently covered with buildings.

A detailed comparison of the plan herewith presented with others suggested as suitable for the construction of many-storied hospital buildings in crowded cities, would lead to a discussion of many complicated problems, and extended in the axis of the ward (as in the case of the typical pavilion hospitals of Germany and Great Britain), 150 to 170 feet would be required from north to south for the ward building alone, and the remainder of the 200-foot site would be of little or no use.

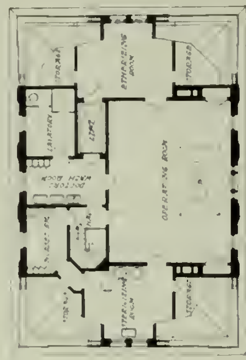
A study of the group plans shows that as much as sixty per cent of the total ground area of a site 200 by 200 feet, 200 by 350 feet, 200 by 500 feet, etc., may be occupied by buildings with satisfactory results.

The wards are well exposed on two long sides and one short side, east, west, and south; the balconies or loggias are ample in capacity and have the decided advantage (in this climate, at least) of southern exposure. They do not to any appreciable extent darken the wards, and they are under the eye of the nurses in the ward; furthermore, they are so subdivided that convalescent patients may

TUBERCULOSIS HOSPITAL, WASHINGTON, D. C.
FRANK MILES DAY & BROTHER, ARCHITECTS.

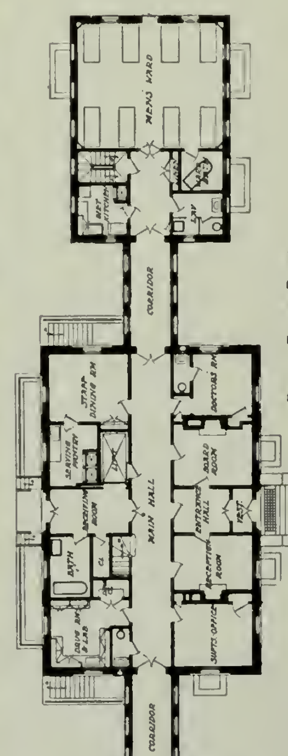
THE LAWRENCE HOSPITAL,
BRONXVILLE, N. Y.

WILDER & WHITE,
ARCHITECTS.

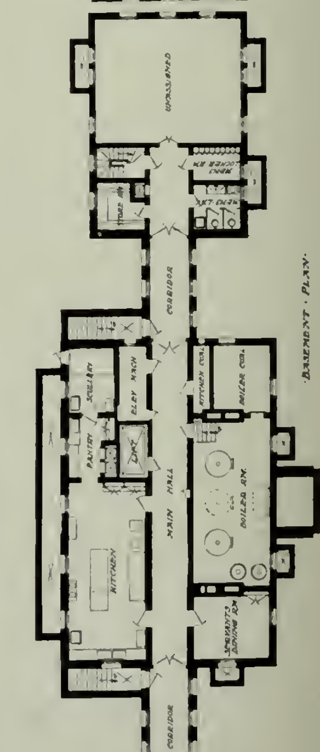


THIRD FLOOR PLAN

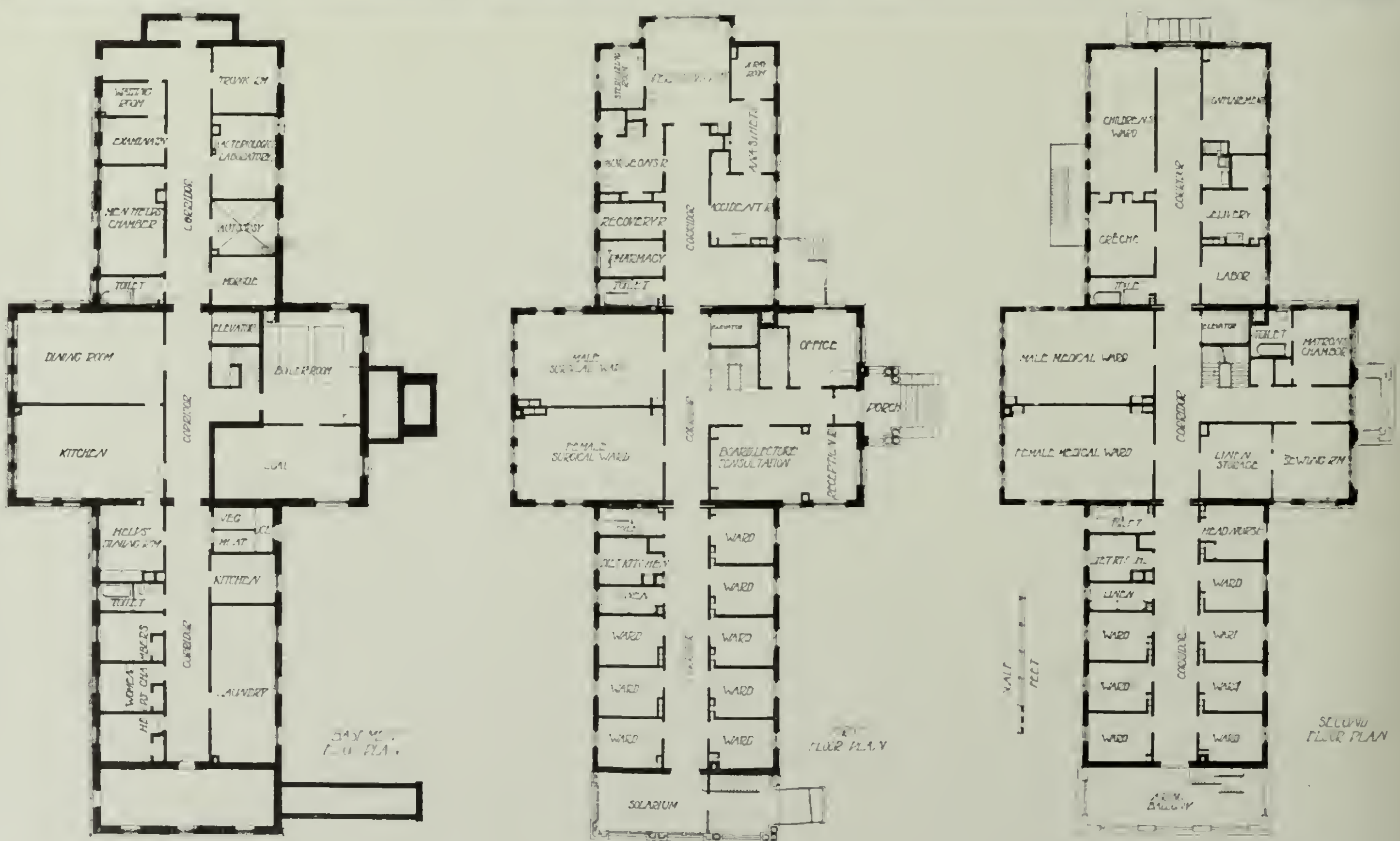
SECOND FLOOR PLAN



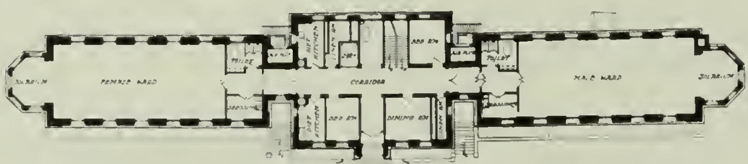
FIRST FLOOR PLAN



BASEMENT PLAN

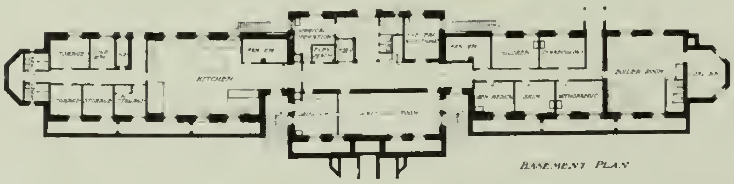


RUFUS S. FROST HOSPITAL, CHELSEA, MASS.
WILLIAM HART TAYLOR & SON, ARCHITECTS.

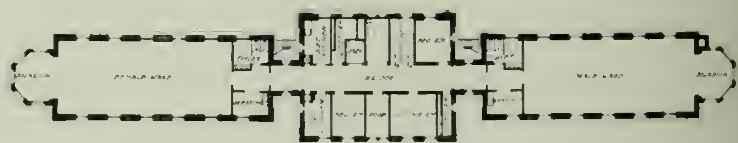


FIRST FLOOR PLAN

FOURTH FLOOR PLAN



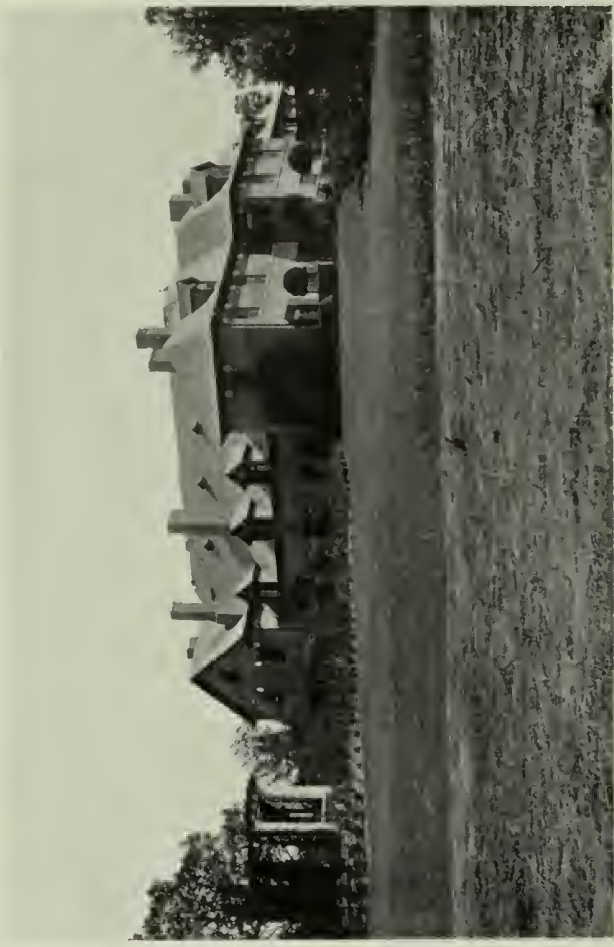
BASEMENT PLAN

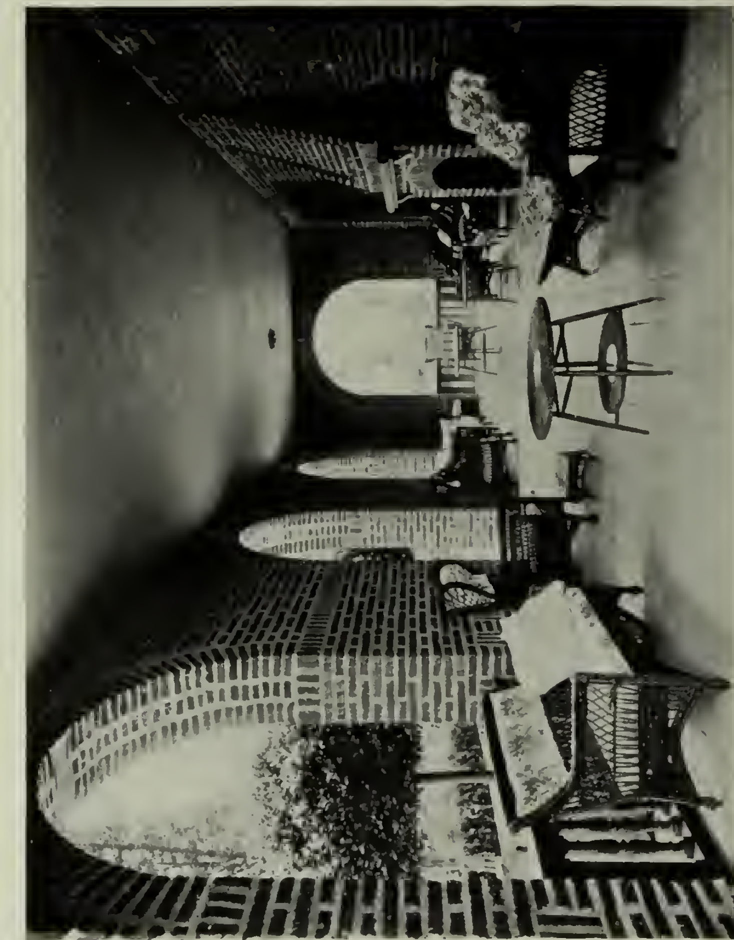


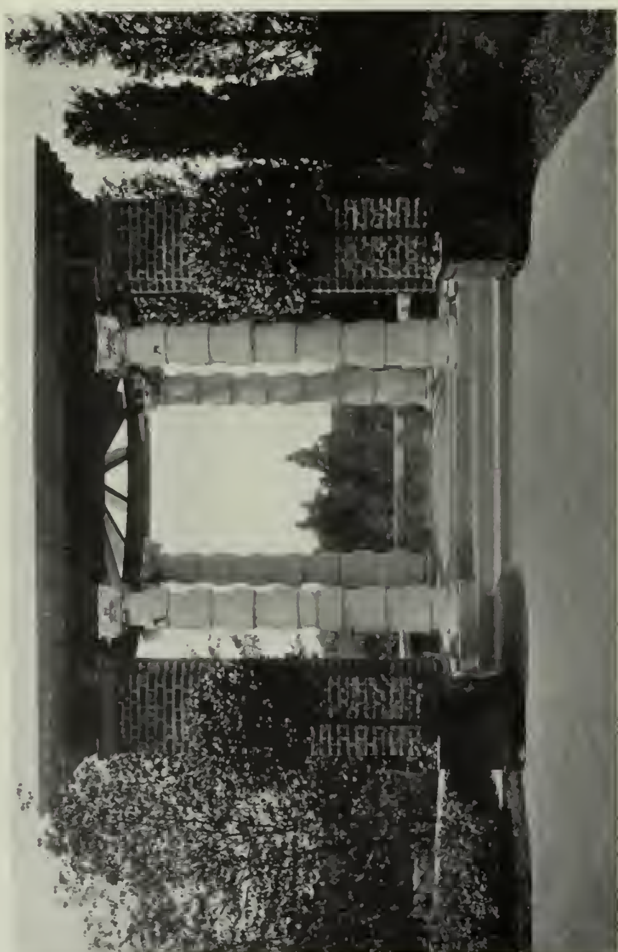
SECOND AND THIRD FLOOR PLAN

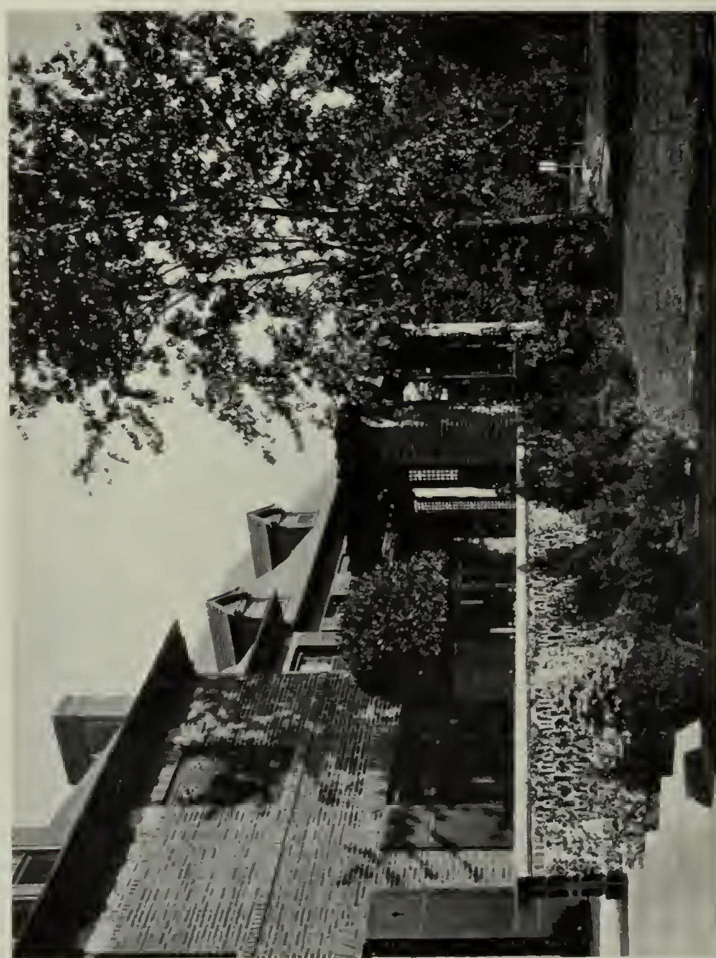
THE JERSEY CITY HOSPITAL, JERSEY CITY, N. J.

CLINTON & RUSSELL, ARCHITECTS.



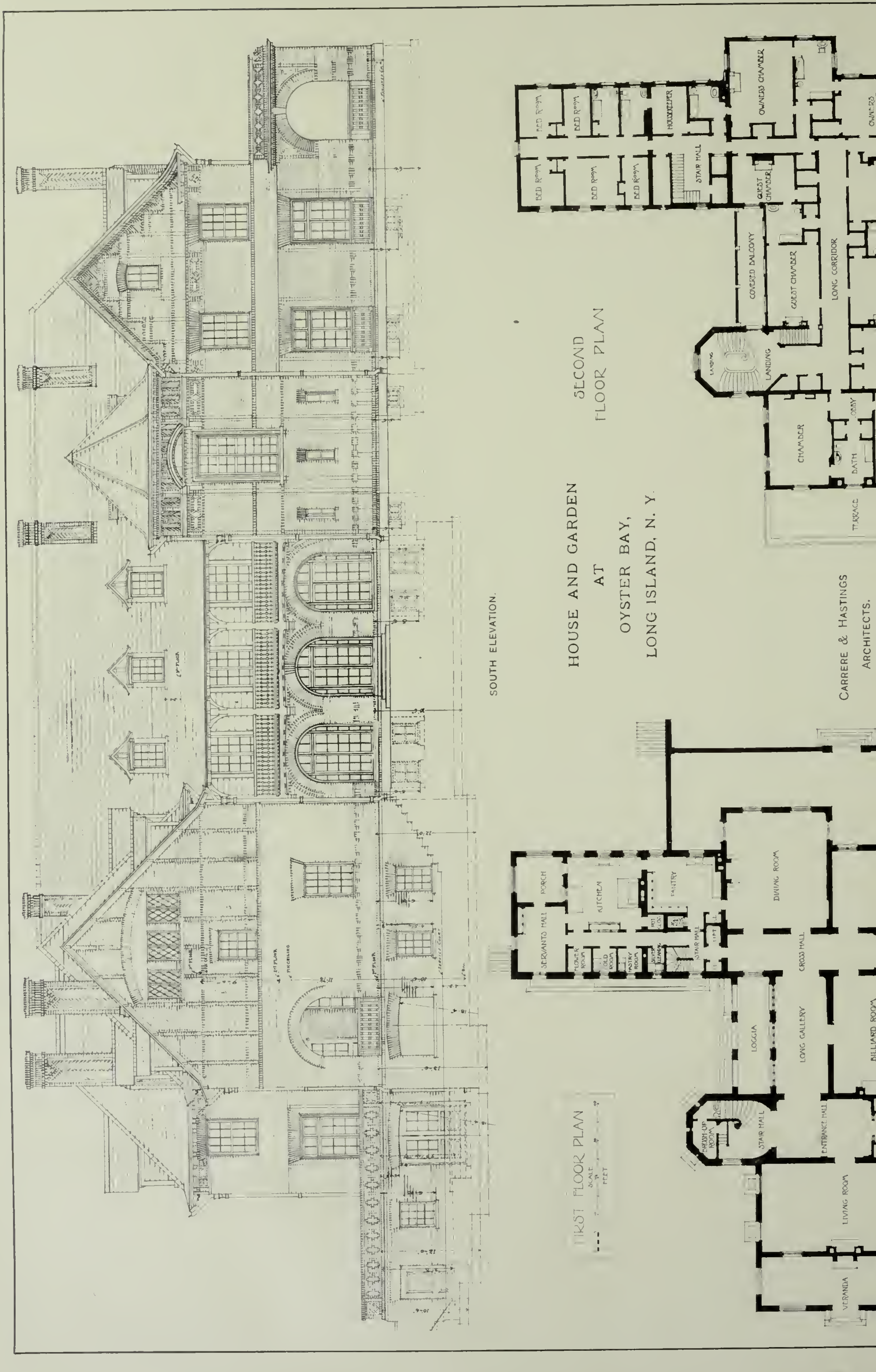






HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y.

CARRERE & HASTINGS, ARCHITECTS.

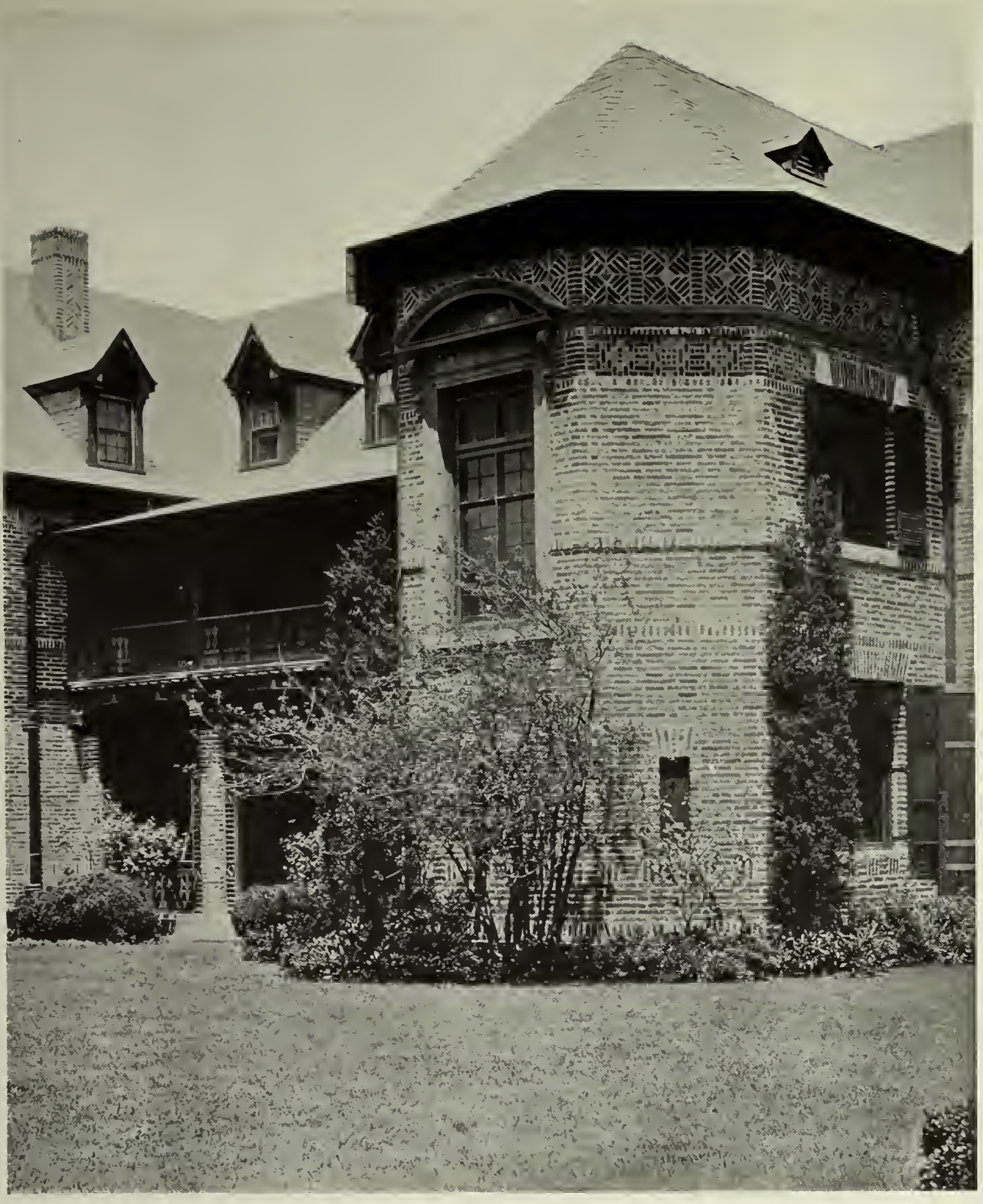

SOUTH ELEVATION.
SECOND FLOOR PLAN
HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y.
CARRERE & HASTINGS ARCHITECTS.
FIRST FLOOR PLAN
OWNER'S CHAMBER
SITTING ROOM
STAIR HALL
GUEST CHAMBER
COVERED BALCONY
LONG CORRIDOR
LANDING
DRESSING ROOM AND BATH
CHAMBER
BATH
TERRACE
UNCOVERED TERRACE
DINING ROOM
LIBRARY
KITCHEN
PANTRY
PORCH
SERVANTS HALL
CROSS HALL
VESTIBULE
LOGGIA
LONG GALLERY
BILLIARD ROOM
ENTRANCE HALL
LIVING ROOM
VERANDA

HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y.
CARRÈRE & HASTINGS, ARCHITECTS.

DETAIL OF LOGGIA OVERLOOKING GARDEN.

HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y.
CARRÈRE & HASTINGS, ARCHITECTS.

VOL. 19. NO. 9. PLATE 123.



DETAIL IN COURTYARD.

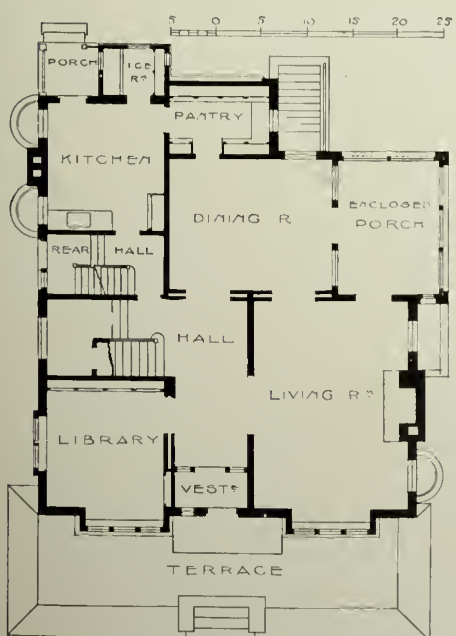
DETAIL OF MAIN FACADE.

HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y.

CARRERE & HASTINGS, ARCHITECTS.

VIEWS OF GARDEN.

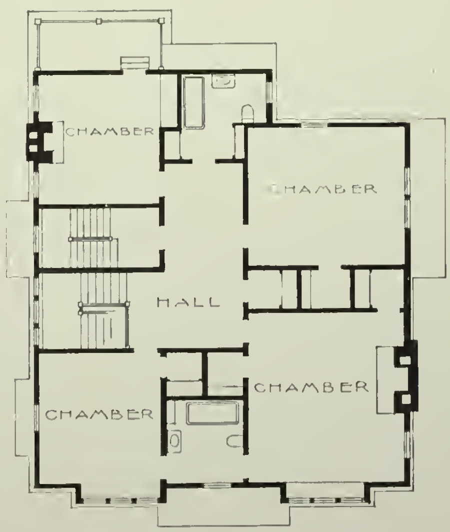
HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y.
CARRÈRE & HASTINGS, ARCHITECTS.



FIRST FLOOR PLAN

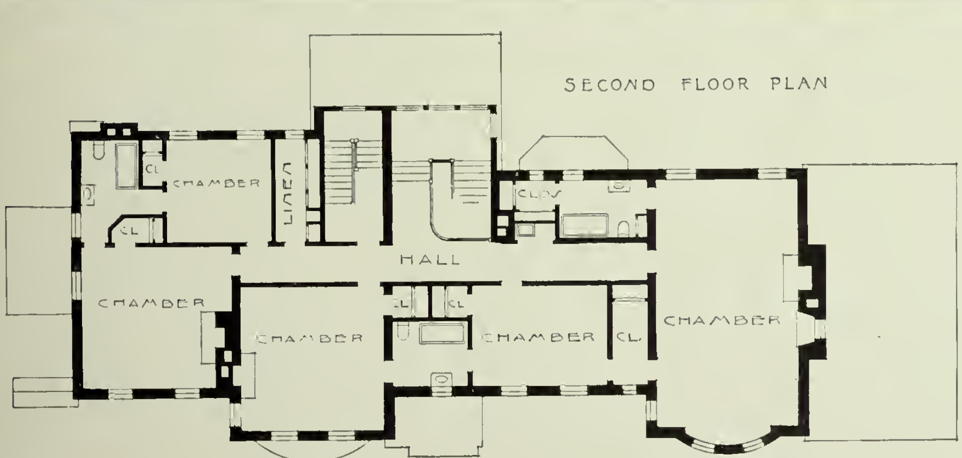
HOUSE
AT
CLEVELAND,
OHIO.

FRANK B. MEADE,
ARCHITECT.



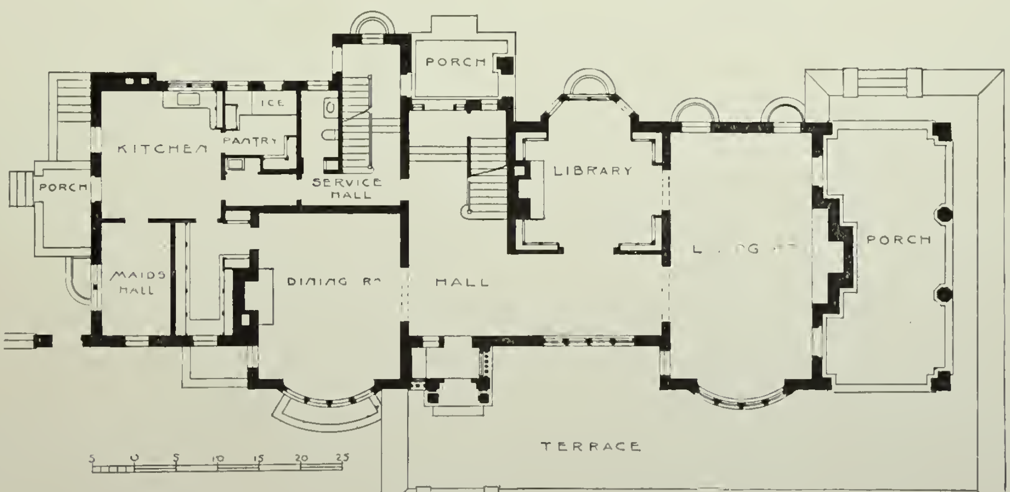
SECOND FLOOR PLAN

SECOND FLOOR PLAN

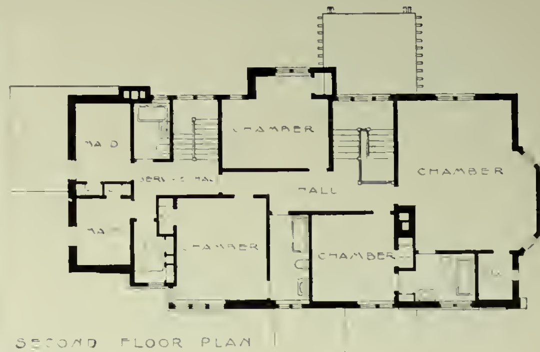


HOUSE
AT
CLEVELAND,
OHIO.

FRANK B. MEADE,
ARCHITECT.



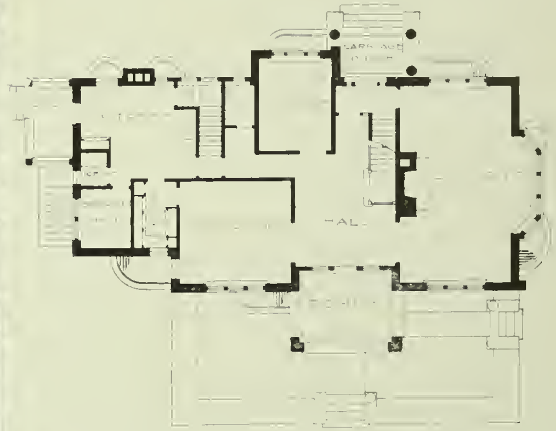
FIRST FLOOR PLAN



SECOND FLOOR PLAN

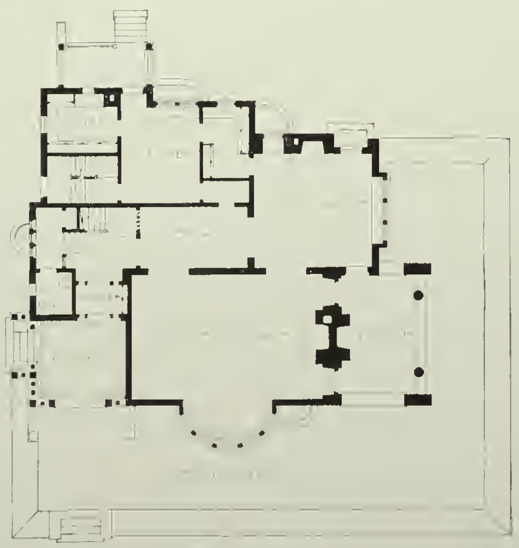
HOUSE AT
CLEVELAND, OHIO.

FRANK B. MEADE,
ARCHITECT.



FIRST FLOOR PLAN

SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE AT CLEVELAND, OHIO.
Frank B. Meade, Architect.

amuse themselves without restraint on one balcony, while very sick bed-patients are obtaining the benefits of fresh-air treatment, in undisturbed quiet, on the other. Each balcony is directly visible from one of the principal service rooms, namely, the pantry or the sink-room. The balconies are set back at a comfortable distance from the street.

The balcony, day-room, lavatories and water-closets designed for the use of convalescent patients are grouped about one end of the main corridor; the isolation of the very sick takes place at the opposite end of the corridor, convenient to the principal service rooms, and entirely out of the range of observation of the convalescent patients and their friends.

The stairway and elevator lobby is isolated and yet occupies an especially favorable location, directly opposite the main entrance to the ward. Visitors approaching the ward do not pass through a long service corridor, but find their way immediately to their proper destination.

The principal corridor is arranged to serve as a true cross-ventilating corridor.

The horizontal arm of the "T," running east and west, can be lengthened, and the vertical arm shortened, if desired, for the purpose of increasing the number of separation rooms and of diminishing the number of patients in the open ward.

A special modification of the typical ward plan, to meet the altered requirements of a children's service, is included among the sketches submitted. Features of this plan are the observation windows permitting the control of the children's water-closets from the nurses' utility-room; the rooms for isolated cases or for babies and wet-nurses; the glass "boxes" for semi-isolation within the large ward; the larger bathroom, to accommodate bath tub and slab.

Bridges may be carried from the ward buildings to the north, east, or west, without detriment to the wards. In a group plan including two ward buildings, a bridge to the east or west would give convenient access to a central administration building. In a group plan including but one ward building, a bridge to the north would communicate with an administration building facing the northerly street; in a larger group plan, bridges to the north would communicate, according to the details of the general scheme, with an administration building, kitchen and laundry building, pathological laboratory, operating pavilion, out-patient department, or with buildings used for any variety or combination of the purposes named. In the larger and more complete group plans a separate out-patient building, not too high, would be placed at the south-east or south-west corner of the block and would be balanced by a private patients' pavilion at the opposite corner, leaving the ward buildings well exposed.

The essential feature of the scheme herewith presented, in which it differs from any published or applied ward plan known to the writer, is the combination of ward and balcony in a T-shaped plan, which, under the common conditions of hospital construction in crowded cities, seems to offer advantages not otherwise attainable.

I am indebted to Messrs. McKim, Mead and White for kindly permitting me to have the accompanying drawings prepared in their office.

"On the Use of an Elastic Ward Unit in the Construction of Hospitals for Contagious Diseases."

A TOWN hospital for contagious diseases usually includes two separate ward units, intended respectively for the care of cases of scarlet fever and diphtheria. The ward unit as a rule is planned for both sexes, and it includes therefore at least two bedrooms for patients, together with the necessary ward appendages or service-rooms. If the "contagious" wards are on the grounds of and connected with a general hospital, the central administration buildings of the general hospital may be made to serve the contagious wards as well. If the contagious hospital is planned to be governed independently, administration buildings must be provided for it. However this may be, the problems encountered in the construction of the wards themselves are always the same, and it is with one of these problems, which hitherto has appeared to baffle the ingenuity of hospital architects and hospital administrators, that this paper proposes to deal.

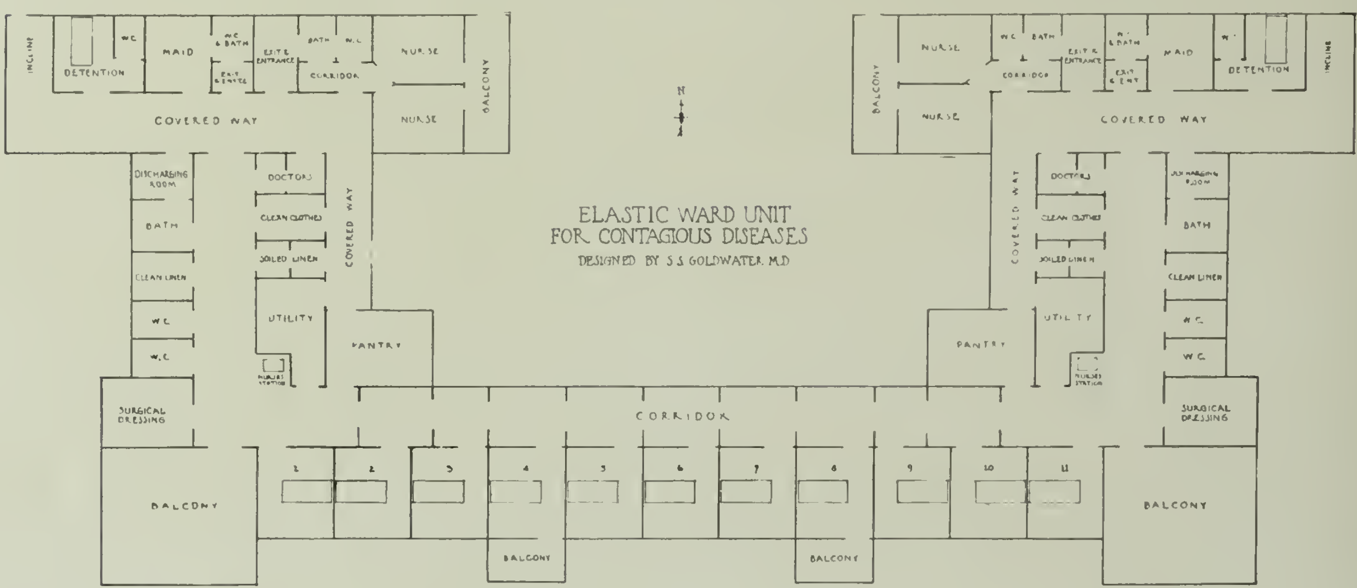
The bed capacity of a hospital ward is determined by its cubic contents; and if this is a fixed quantity, as it usually is, the normal capacity of the ward is fixed and unchangeable. Now the contagious or epidemic diseases, from their very nature, are of fluctuating frequency. In a given community the average requirement for scarlet fever and diphtheria patients together may be twenty, forty, or sixty beds, but during one month or season twice as many beds may be needed for the care of scarlet fever cases as are demanded for cases of diphtheria, while during the ensuing month or season the proportions may be reversed. Compelled to face a demand so changeable, administrators are sorely put to it to make both ends meet; and often they find themselves so circumstanced as to be obliged either to overcrowd their wards (a very dangerous procedure indeed in the case of contagious diseases), or to turn away patients in need of hospital care, even though one wing of the hospital remains partially unoccupied. Notwithstanding these conditions, the practice in the construction of wards for contagious diseases is still to provide units of fixed capacity.

It is true that in order to be prepared for emergencies towns sometimes plan their contagious wards on the scale which is necessary to meet the probable maximum demand for beds for each of the more important contagious diseases; this means that many beds are unused most of the time. The great economic waste involved in this policy has been repeatedly noticed by writers on municipal sanitation, and in at least one instance, namely, in the case of the Hospital Pasteur in Paris, it has led to the adoption of the plan of caring for a variety of contagious diseases, of whatever kind, in rooms connected with a single corridor. In this hospital the patients' rooms are small and are designed (excepting certain three-bed wards for convalescents) for the occupancy of a single patient. On each floor there is a single set of service-rooms, to be used by the nurse or nurses assigned to the care of the miscellaneous cases on the floor.

Although it is claimed by the medical directors of this hospital that nurses can be placed in charge of a variety of contagious cases, and can be so trained that there is practically no danger of the transmission of disease from one patient to another, provided the patients themselves are not allowed to come into contact with each other, neither medical nor public opinion in this country is prepared as yet to accept these claims as fully established. Even if the safety of this arrangement should be established ultimately, the method cannot be commended as one which is wholly economical from the standpoint of nursing administration, because of the great loss of time involved in the cleansing and clothes-changing process which must be followed by each nurse as she passes from one patient to another. A further objection to the method of the Hospital Pasteur is that it necessitates something akin to prison regimen for the patient, who necessarily must be confined closely to his room or cell, because if he leaves it he is sure to come into contact with patients suffering from other contagious diseases.

The method just described represents, however, a commendable effort to convert ordinary wards for contagious diseases, with their fixed capacity and frequent waste of beds, into wards of variable capacity; and it has occurred to the present writer that wards of variable capacity — an elastic ward unit, in other words, having convertible or optional bed space, can easily be designed in a manner which will entirely satisfy all reasonable demands for economy in both construction and administration, and which will accomplish this in such a way as to recognize and satisfy the prevailing demand for completely separate services for each contagious disease. Two such wards, arranged as a pair, are shown in the accompanying plan. It will be seen at a glance that the same principle can be applied to a group of three or four ward units, wherever it is thought desirable to make provision for contagious diseases in addition to scarlet fever and diphtheria.

The accompanying plan shows a series of patients' bedrooms facing south, and arranged as single rooms (rooms for two, four or six beds may be preferred by some for the sake of nursing convenience, though from a strictly sanitary standpoint, patients suffering from contagious diseases are most safely treated in single rooms). The patients' rooms open on a corridor which terminates in a large balcony east and west, and which is continuous with two service corridors, one at each end. The main corridor is so planned that it can be subdivided; and in this manner there may be joined to the service-rooms at either extremity, any desired number of patients' bedrooms, from one to ten (more if a longer series be adopted). The mode of procedure is as follows: The first scarlet fever case, let us say, is admitted to Room 1, and the corridor is closed between Rooms 1 and 2. The first diphtheria case is admitted to Room 11, the corridor being closed between Rooms 11 and 10. The rooms between 1 and 11 are uncontaminated, and are ready to be used in succession either with Room 1 or with Room 11, as the demand arises. The second scarlet fever case is placed in Room 2, the second diphtheria case in Room 10, etc.



The large balconies are sufficiently spacious to afford ample opportunity for fresh-air treatment, but are so far apart that there is no chance of contact between the two groups of patients. Some of the patients' bedrooms have individual balconies, and these rooms may be used for the accommodation of special cases, such as patients for whom strict isolation is desired for sanitary or disciplinary reasons, or private patients who may not wish to mingle with the general run of patients who will take their airings on the large balconies.

The plan illustrates in its further details many minor administrative methods, but the purpose of this paper is not to discuss these.

The elastic ward unit for contagious diseases is suggested as a means to economy in the construction and administration of hospitals for contagious diseases — a means consistent with the principles of sanitary science, and entirely practical, because not at variance with the controlling beliefs or prejudices of either the medical profession or the general public.

A Contract Between Architect and Owner.

BY WM. BROKAW BAMFORD, M. AM SOC. C. E.

ARCHITECTS seldom enter into a written contract or agreement with owners for the work they are commissioned to undertake. This is partly due to the fact that professional men do not as a rule make written contracts with their clients.

When an oral agreement for the employment of services takes the place of a written agreement, and for any reason litigation results from such employment, oral testimony or professional custom is usually all that can be brought forward by an architect in support of his claims. In the case of lawyers and physicians much litigation and a well established code of professional practice largely offset the need for a written agreement with clients. With architects, however, their professional practices is still a subject of much diversity of opinion among themselves, and the numerous cases of litigation have served to confuse rather than to simplify professional custom.

It seems, therefore, very desirable for architects to enter into written agreements with their clients in order to clearly establish what each one agrees to do, and what they should expect of each other. Until the very admirable code of professional practice adopted at the 1909 convention of the American Institute of Architects becomes more thoroughly understood by the layman (who is a vital factor in a trial by jury), and followed by architects themselves, the written agreement should be executed between architect and client rather than trust to an oral understanding or professional custom to justify an architect's claims regarding the terms of his employment.

In offering the following agreement together with suggestions for same, the writer desires to point out the conditions which should be incorporated rather than offer a form to be used as a model for universal use.

AGREEMENT BETWEEN ARCHITECT AND OWNER.

THIS AGREEMENT, made this..................day of .... One thousand, nine hundred and...... ......between .... hereinafter designated as the Owner and......................... hereinafter designated as the Architect, for professional services in connection with a......................... to be erected at........... ....; Witnesseth as follows:

....

The owner on his part agrees:

I. *Furnish Information.* First: To furnish the architect in writing with full information covering the proposed plan, arrangement and requirements of the building together with any special features he may desire, and the approximate size and proposed cost thereof.

In order to overcome much of the uncertainty caused by an owner who gives to an architect vague or conflicting instructions of the requirements which he expects to have embodied in his drawings, it is best to have the owner confirm his final decisions in writing, after all matters have been thoroughly discussed. This will prevent many misunderstandings and petty friction, if not more serious trouble.

II. *Survey, etc.* Second: To furnish a complete and accurate survey of the property giving the grade and lines of streets and adjoining properties; the rights, restrictions, boundaries and contour of the property on which the building is to be erected; and full information relating to the sewer, water, gas and electric service.

The owner should be responsible for obtaining a correct survey of his property, giving all restrictions, etc., which must be observed. In cities especially, there are many ancient restrictions of which an owner may not be aware. If he obtains a survey, and has it guaranteed by some reliable surety company, both owner and architect will be saved from very annoying future trouble if restrictions are discovered after the building is partly or completely finished.

III. *Borings.* Third: To make all borings necessary to determine the quality of the foundations, and furnish the architect with full information relating to the same.

The nature of the material underlying the foundations will govern the character of such foundations. If this material is not known for a number of feet below the level of the footings disagreeable surprises may await both owner and architect, if, after the building has seriously settled and an examination has been made, it is found that treacherous material lies just below the firm material upon which the footings rest. The owner should, therefore, have borings made before the final drawings are completed and the contract for the work awarded to a contractor.

IV. *Specialists.* Fourth: To employ any specialists who shall be acceptable to the architect, if same are necessary in connection with the heating, ventilating, mechanical, structural, electrical, and sanitary work. Such specialists shall do their work under the direction of the architect.

Any specialists who are employed should be acceptable to the architect in conjunction with whom they are to work, otherwise men who are incompatible may be brought together by an owner, to the annoyance of all concerned.

V. *Tests.* Fifth: To employ specialists if necessary and pay all expenses for chemical and mechanical tests which may be required in connection with the work.

If any tests of materials, etc., are necessary it is advisable to have a distinct understanding regarding them. An owner will usually insist that such work is a part of an architect's services and that he should pay for any specialists necessary to do his work for him.

The architect on his part agrees:

VI. *Preliminary Studies.* First: To consult and advise with the owner and make such preliminary studies as will acquaint the owner with the contemplated arrangement, design and construction of the building, and enable the owner to accept said preliminary studies as the basis of working drawings and specifications; and to agree with the architect upon a definite limit of cost for the building.

In order to reach some definite understanding regarding the proposed cost of the work and the final requirements of the owner, the preliminary studies are important. These should be formally accepted by the owner before an architect proceeds to make his final drawings, otherwise the architect may be put to a great expense correcting the final drawings. The owner may refuse additional compensation for such extra work, or may even decline to pay for any work, if after estimates are received from contractors it is found that the lowest bid overruns an indefinite, intangible, or absurdly low cost which the owner claims he did not wish the work to exceed.

VII. *Working Drawings.* Second: To make, upon the basis of the accepted preliminary studies, one complete set of working drawings and such detail drawings on a larger scale as are necessary to explain the working drawings and specifications.

If the working drawings are made upon the basis of an approved set of preliminary drawings, then any changes or modifications necessary can be more accurately traced to their source, and the architect under Section VIII. *Re-Study or Re-Draw Working Drawings*, would then be expected to correct only such errors or reasons for possible increases in proposed cost for which he has been responsible.

VIII. *Re-Study or Re-Draw Working Drawings.* Third: To re-study and if necessary re-draw without charge, any or all of the working drawings, if owing to an unwarranted departure from the approved preliminary studies or to a needless extravagant or elaborate interpretation of them in said drawings and specifications, the lowest bid for doing the work in accordance therewith overruns the limit of cost agreed upon by the architect and the owner.

IX. *Prints.* Fourth: To furnish for the use of the owner and contractor, ... sets of prints mounted on cloth, taken from the said set of working drawings, ... copy of all large size details and .... sets of specifications prepared for work furnished or done under his supervision. Any additional prints or specifications required by the owner or contractor shall be paid for at actual cost.

The drawings, specifications and all copies therefrom, as instruments of service, shall remain the property of the architect who reserves and retains all rights thereto, and they shall be returned to him upon the completion or discontinuance of the work.

It is advisable to definitely establish the number of sets of prints which an architect should supply to an owner or contractor free of cost. Otherwise he may find he has been shouldered with a good size expense account for prints.

X. *Building Permit.* Fifth: To make application for a building permit and deliver to the building or other local authorities such prints from the said set of working drawings and specifications as may be required by them.

The architect, on behalf of the owner, should arrange to obtain a building permit, either before or after the contract for the work is let. If this is not done the owner may try to compel a contractor to perform a contract which requires work to be done contrary to law and he may be liable for a claim for additional compensation on account of a modification in the work necessary to make it conform to law, or a claim for a right to terminate the contract and a demand for damages.

It is mutually understood and agreed:

XI. *Architect's Authority.* First: The architect shall have general direction and supervision of all work to be done under any contract for the construction of the building, including all fixtures necessary to render it fit for occupancy. By supervision of the architect (as distinguished from the continuous personal superintendence which may be secured by the employment of a clerk-of-the-works or superintendent of construction) is meant such inspection by the architect or his deputy of work in studios and shops, of the building or other work in process of erection, completion, or alteration, as he finds necessary to ascertain whether it is being executed in general conformity with his drawings, specifications or directions. The architect is authorized to reject any part of the work which does not conform to the drawings and specifications and to order its removal and reconstruction. The architect is also authorized to act in emergencies that may arise in the course of construction, to order necessary changes, and to define the intent and meaning of the drawings and specifications.

If the operations require the services of a clerk-of-the-works or superintendent of construction, the architect, with the consent of the owner, shall employ such assistance and the expense shall be borne by the owner.

This section follows the schedule for professional practice adopted by the American Institute of Architects and should be included in the agreement to prevent misunderstanding.

XII. *Variations and Extras.* Second: The architect shall have authority at his discretion to order on behalf of the owner any necessary changes or modifications to the work whether the same may or may not involve any variation in the amount of the contract. The architect shall also direct the contractor to make any changes or additions to the work ordered by the owner either verbally or in writing, and unless otherwise directed by the owner shall notify the contractor of the manner of payment as provided in Section XVIII. of the architect's standard form of *Schedule of Conditions of Contract.*

The architect shall, as soon as is reasonably possible, notify the owner in writing of any changes or modifications which he has ordered which involve a variation in the amount of the contract, and where possible the amount of such variation or the method for determining the amount of such variation as provided in Section XVIII. of the *Schedule of Conditions of Contract* above referred to.

It is also mutually understood that the owner hereby ratifies and confirms all orders or directions of the architect which may be given in connection with the work; provided, however, that the right is reserved to the owner at any time to withdraw the authority for the architect to order changes or modifications involving a variation in the amount of the contract, by giving to both the architect and contractor written notice of his withdrawal of such authority. In such an event the architect shall issue no further orders involving any variation in the amount of the contract unless the same have been authorized in writing by the owner, and in the event of the architect's then giving any such orders or directions he shall be held personally responsible for any expense in connection with the same.

This section is a decided innovation, and the writer asks for it special study as the subject is one of vital importance to architects — the status of the architect.

The status of the architect, as agent of the owner or professional adviser, is most often called into question in connection with orders for extra work or alterations to the contract. The architect may verbally order certain work to be done or changes made, and even should such work legitimately entitle the contractor to extra compensation, he may find it hard to collect such compensation without the written order of the architect. Even with such written order there may be trouble for both architect and contractor if the owner repudiates such order as not being authorized by him, and a court of law holds the architect to be the professional adviser and not the agent of the owner, and that he had no authority to involve the owner in additional expense without his express authority. In such a contingency the contractor may find that his only chance for redress is in a suit against the architect.

There are many times when extra work or modifications to the contract should be made at once in order not to delay the work. The architect who always has his orders confirmed by the owner before issuing them to the contractor, may find the owner temporarily away or difficult to reach at once or for other reasons may consider it advisable to order such work on his own initiative without first consulting the owner. For that reason the writer advocates placing in the general conditions of the contract a section for a provisional sum for contingencies similar to the following:

"*Provisional Sum for Contingencies.* Provide the sum of $........ for extra work (over and above the provisional sums specified in the various trades), to be used as directed by the architect, or deducted wholly or in part if not directed to be used."

An architect can then legally order the work within the amount available for contingent items without waiting for an owner's confirmation. This is a very important consideration for rush work and a contingent sum provides a very practical help out of much of the difficulty.

Such a section as the above is usual in many carefully prepared British specifications. The blanket sum usually allowed for contingencies would vary from about five per cent to ten per cent of the contract amount depending on the nature of the work and the uncertainties likely to be encountered. This section would cover extra orders of the architect not otherwise protected by an owner's written confirmation, and would assist in expediting the work and help to straighten out the analogous position of the architect in issuing orders direct to a contractor.

The money for contingent items would be spent as the architect directs and the following section should be given in the conditions of contract to cover such cases:

"*Provisional Sums.* The provisional sums mentioned in the specification for materials to be supplied or for work to be performed by special contractors or mechanics or for other works or fittings to the building, shall be paid and expended at such times and in such amounts and to and in favor of such persons as the architect shall direct, and sums thus expended shall be payable by the contractor without deductions or discount, or (without prejudice to any rights of the contractor existing under the contract referred to in Section ....) by the owner to the said contractors or mechanics. The value of works which are executed by the contractor in respect to provisional sums, or in additional works, shall be ascertained as provided by Section......... At the settlement of accounts the amount paid by the contractor to the said contractors and mechanics, and the said value of such works executed by the contractor, shall be set against all provisional sums or any sum provided for additional works, while the balance after allowing *pro rata* for the contractor's profits at the rate of . . . per cent, unless different rates are contained in the contractor's original estimate, shall be added to or deducted from the contract sum provided that in estimating the amounts paid as last herein provided no deductions shall be made by or on behalf of the owner in respect of any damages paid by the sub-contractor to the contractor, the intention being that the contractor and not the owner shall have the benefit of any such damages."

To carry the question a little further towards a legal solution the writer considers that for certain cases it might be advisable to insert the section hereinafter given in a contract between the architect and owner.

XIII. *Certificates.* Third: The architect shall make recommendations concerning all estimates and allowances of the contractor for payments under any contract, and issue a certificate to the contractor for the amount he considers due him.

No certificate of the architect shall of itself be considered conclusive evidence as to the sufficiency of any work or materials to which it relates so as to relieve the contractor from his liability to execute the works in all respects in accordance with the terms and upon and subject to the conditions of the building contract or from his liability to make good all defects as provided thereby.

This is rather an innocent looking section but it relates to a subject which has been the source of loss of considerable sums of money by architects in Great Britain. In many cases damages have been recovered from architects because they issued certificates to contractors for work which later was found to be defective. It was claimed that those certificates actually warranted that the work paid for was properly completed. When the contract between the owner and contractor did not provide for legal recovery against a contractor, the architect has been held financially responsible.

In a uniform form of agreement and conditions of contract prepared by the writer the following is inserted to overcome the legal difficulty:

"No certificate of the architect shall of itself be considered conclusive evidence as to the sufficiency of any work or materials to which it relates so as to relieve the contractor from his liability to execute the works in all respects in accordance with the terms and upon and subject to the conditions of this agreement, or from his liability to make good all defects as provided thereby."

XIV. *Changes in Work.* Fourth: The architect shall advise with the owner on any work or changes in the building contemplated by the owner, and the owner shall order through the architect all work or changes required by him.

Such a section is desirable to establish the fact that an owner should not order the contractor to make changes or modifications, but such orders should be given by the owner to the architect and from him to a contractor. This seems obvious but too often it is not understood or followed by an owner.

XV. *Payments.* Fifth: The owner shall pay all necessary traveling expenses of the architect and as full compensation for the services aforesaid shall pay the architect........ per cent upon the total cost of the building and other work, including all fixtures necessary to render it fit for occupation. The total cost of the building shall be interpreted as the cost of all materials and all labor necessary to complete the work, plus the contractor's profit and expenses, as such costs would be if all materials were new and all labor fully paid at market prices current when the work was ordered. Payments shall be made as follows: Upon completion of preliminary sketches one-fifth (1/5) of the entire fee; upon the completion of specifications and general working drawings (exclusive of details), two-fifths (2/5) additional, and thereafter........ per cent of the amount which the architect shall certify is due the contractor. The final payment shall be however an amount sufficient to make the total payments equal the full amount due the architect. Until an actual estimate is received, the architect's charges shall be based upon the proposed cost of the work, and payments shall be made on account of the entire fee.

In case of the abandonment or suspension of the work, the owner shall upon demand of the architect pay the architect as follows: For preliminary studies, a fee in accordance with the character and magnitude of the work; for preliminary studies, specifications and general working drawings (exclusive of details), three-fifths (3/5) of the fee for complete services.

This section follows the procedure adopted by the American Institute of Architects.

XVI. *Payment for Variations.* Sixth: When for any reason other than those stated under architect's agreements, Section VIII. above, the owner shall request the architect to make alterations or modifications to the approved studies, drawings or specifications, or request him to prepare studies, drawings or specifications for work not included in the approved studies, etc., for the building, the owner shall pay to the architect if such work is constructed...... per cent of the total cost, and if such work is not constructed he shall pay in proportion to the importance of the work done and service rendered.

When for any reason the owner shall vary the amount of any contract by accepting a credit for the omission or modification of any work, the owner shall pay the architect the full commission on the work, the same as if it had been executed.

In many respects this section may appear to many to be a novel provision. It would certainly be novel for many architects if they should receive compensation for the work covered by this section. Claims for such extra work on the part of the architect are legally difficult, if not impossible, to collect without a written agreement. This clause, therefore, will undoubtedly be studied and probably indorsed in principle by a goodly number of architects.

XVII. "*Building*" *Defined.* Seventh: It is further mutually understood and agreed that in the above agreement the term "building" is used to define not only the structure itself, but all work in connection with it committed to the architect by the owner such as fencing, grading, roads, walks, planting, decorative painting and sculptural decoration.

A definition of the word "building" will prevent misunderstanding in many cases regarding payment to the architect for work which is not always included in the allowance for an architect's services.

In Witness Whereof, the parties to these presents have interchangeably set their hands and seals the day and year above written.

Signed, Sealed and Delivered
in the presence of: ....

In conclusion, the writer trusts that the preceding suggested forms of agreement may indicate ways in which architects can obviate much of the unnecessary misunderstanding between themselves and their clients.

Plate Illustrations—Description.

Tuberculosis Hospital, Washington, D.C. Plate 115. This hospital for the District of Columbia is situated upon a high and rolling plot of thirty acres, about three miles to the northward of the White House. The ground was purchased by Congress for a large general hospital with contagious and tuberculosis departments. Up to the present time this is the only one of the forty buildings originally intended that has been constructed. The services, such as nurses' home, domestic service building, etc., which were originally planned in separate buildings, have had to be accommodated in the present instance under one roof. The interest of the building lies in the four open wards, one of which is found over each of the three wings and one upon the fourth floor over the central building. Each ward is provided with its own dressing room, roofed in and amply protected on the exposed sides. The idea of these covered roof spaces used in lieu of the usual slightly constructed open-air wards upon the ground has proven very satisfactory, both to the management and to the patients, and was suggested by Dr. Geo. M. Kober, Washington, D. C., chairman of the commission in charge of construction. A fact which considerably complicated the planning of the building was the necessity of making provision not only for the usual divisions of incipient and advanced cases in the male and female wards, but also the separation of the white and colored. This gave rise to the eight divisions shown upon the plan, such as incipient white male cases, advanced white male cases, etc. The appropriation was not sufficient for the number of beds called for, and so it was impossible to erect the building of fireproof construction. But by pursuing every possible economy the building was constructed for the low cost of $900 per patient, which price included all but movable equipment.

THE LAWRENCE HOSPITAL, BRONXVILLE, N.Y. PLATE 116. This building was planned to meet the needs of a growing suburban community. It was designed to appear a completed structure externally, and still permit of future additions, which led to the adoption of the pavilion type. In order to accommodate both surgical and medical cases a large number of private rooms were planned, while its public character required wards for both men and women. The public wards are located in the so-called ward wings temporarily and will later be permanently housed in ward buildings connected with the ward wings and constructed at right angles with their main axes. The isolation ward is some distance to the rear of the administration building, and the nurses' home is within easy access to all. The building is semi-fireproof in construction. The exterior is faced in gray pressed brick with marble and dull white glazed terra cotta trim. The interior finish is of the simplest and most sanitary character, the trim being of oak. The operating rooms, baths and toilets have tiled floors and wainscots. Flush panel doors are installed throughout. The electric equipment is complete with extensive call and intercommunicating telephone system between all rooms.

RUFUS FROST HOSPITAL, CHELSEA, MASS. PLATE 117. This building covers an area of about 6,000 square feet. The material upon the exterior is "Tapestry" brick with trimmings of cast limestone. The general tone of the brick is dark red, laid in Flemish bond with a white joint. The administration building is three stories high on the front and four stories on the rear, with wings on either side, which in turn are two stories on the front and three on the rear. Upon the interior each floor is provided with a diet kitchen, also a toilet and bathroom for each sex. The third floor is devoted entirely to nurses' sleeping apartments, being individual rooms with a general bath. The entire building is finished in ash and hard plaster. Monolith floors have been used in the operating, surgeons', and sterilizing rooms, as well as baths. A glazed solarium and open porch has been furnished for convalescents. A convalescence exit from the sun porch to the lawns has been provided, the same being of an easy grade, doing away with steps. The building is equipped with elevators and stand-pipe for fire protection. The cost of the building was $56,449.46.

HOUSE AND GARDEN AT OYSTER BAY, LONG ISLAND, N. Y. PLATES 119, 120, 121, 122, 123, 124. The first house in America to be constructed of brick similar in size and texture to many of those used in ancient Rome is shown in the plate illustrations of the house at Oyster Bay, L. I., Carrère & Hastings, architects. This house marks an epoch, in many respects, in the development of artistic brickwork in this country.

GATEWAY IN GARDEN, HOUSE AT OYSTER BAY, LONG ISLAND, N. Y.
Carrère & Hastings, Architects.

The brick are most unusual in size, being 18 inches long, 2 inches thick and 6 inches wide. They vary in color from a rich red to a deep blue with many intermediate shades of light and dark brown, purple and olive. Many of the individual brick bear several colors each and all have rough, rugged surfaces. They are laid in Flemish bond with a 1 inch cream-gray, rough textured mortar joint. So skilfully have these brick been woven together that one loses all sense of a wide variety of color and sees before him only a rich, dark fabric-like wall possessing a delightful texture, yet an extreme softness, perfect harmony and simple dignity.

In appropriate parts of the work patterns have been introduced by the use, as in the gables, of the Dutch cross bond with its diagonal lined mortar joints; by simple belt courses of headers and interesting "herring-bone" patterns, as in the stair tower; by ornamental spandrels over the loggia arches and by the use, as a frieze, of some forty mosaic panels; in all of this work a sufficient amount of soft brownish-gray brick and tile has been used to properly bring out the patterns.

Perhaps the best single word expressive of this brickwork would be "harmony"; it fits its environment. One has the feeling that the house is "at home" among the trees and the flowers of the wonderful old-new garden. There is no jarring note in the blending colors of the brick any more than among the flowers themselves — in fact the house seems to have grown up among them.

These illustrations are of great interest as they exemplify the rapidly increasing use of brick for country house work in America — the adaptation to our needs of the charming old brick house of rural England.

Editorial Comment and Miscellany.

REPORT OF PARISIAN FLOOD COMMISSION.

THE commission that was appointed to investigate measures necessary to prevent a recurrence of the disastrous floods in Paris has submitted its report. It provides for the widening of the Seine above Port St. Michel, the reconstruction of the Archeveche, Double and Petit Pont Bridges, the displacement of the Orleans railway, the modification of the Monnaie barrage and lock, the raising of the embankment walls 50 cm. above the water level of 1910, and the adoption of suitable means for hermetically closing the openings into the Seine. While these suggestions are intended to protect the railways and public works, and prevent the Seine from overflowing the embankments, a still more important undertaking is proposed for relieving the Seine in its passage through Paris. This is to be done by widening the left arm of the Seine on the right of the Ile de la Cite, at an estimated cost of 12,000,000 francs; the deepening of the bed of the river between Suresnes and Bougival, at an estimated cost of 30,000,000 francs; and the construction of a canal from Annette on the Marne, to Epinay on the Seine, at an approximate cost of 170,000,000 francs.

DETAIL FOR CHURCH.
Made by Conkling-Armstrong Terra Cotta Company.
F. Joseph Untersee, Architect.

COMPETITION.

THE Building Trades Employers' Association of New York City is conducting a competition in connection with its permanent exhibition of building materials. The program calls for two houses, one of four rooms costing $2,500, and another of eight rooms costing $4,500. The competition divides itself into two classes; in the first class, or $2,500 house, the three best drawings will be awarded prizes of $100, $50 and $30 respectively, while a like number of drawings in the second class will receive $150, $75 and $50. In addition to the six prizes mentioned, three drawings in both classes receiving honorable mention will be awarded $20 each. Designs are solicited from all architects and architectural draftsmen. At the close of the competition, December 1, 1910, models will be made from the winning designs and given a permanent place in the exhibition department. The committee to judge the drawings will be William A. Boring, Donn Barber and Grosvenor Atterbury. The program of the competition, with full terms, may be obtained from the Association at 34 West 33d street, New York City.

HOUSE AT GRAND RAPIDS, MICH.
Built of light gray "Astrakhan" rough faced brick, made by Columbus Brick and Terra Cotta Company, F. H. McDonald, Agent.
Frank Lloyd Wright, Architect.

MOVING A STRAIGHT BRICK WALL.

THE setting of a larger paper machine in the Watervliet, Mich., paper mill, necessitated the relocating of one of the brick foundation walls of the old machine, 150 feet long, 16 feet high and 21 inches thick, which was composed of a succession of 3-foot piers, 8 feet on centers, arched over with a 42-inch crown. The new machine was 23 inches wider than the old, and the paper company intended to tear down one of the brick foundation walls and rebuild it in proper location to accommodate the new machine. This would have involved an expense of about $1,000. It was suggested by the contractors, who were reconstructing a considerable portion of the interior of the mill, that new footings be built and the wall moved 23 inches to one side. This plan was adopted by the paper company when the price for the work agreed upon was less than half the cost of tearing down and rebuilding. — *Engineering Record.*

AN ENGLISH VIEW OF TOWN PLANNING.

A. R. DAVIDGE, F.S.I., England, in an elaborate discussion of Town Planning gave expression to the following points: Each town must have an individuality of its own; natural assets — such as hills, wood and water — must be preserved and extended; main lines of route must take direction required by traffic and contour of ground; geometrical planning must not necessarily be adopted as satisfactory; long, straight streets when adopted should have a definite "motive"; slight curves or irregularities in frontage lines may in many cases be adopted with advantage; line of sight should in most cases be restricted within reasonable limits — i e., lines of long streets except as mentioned above should be broken and all views should as far as possible be framed in a suitable setting; the grouping or arrangement of the principal buildings and open spaces should in all cases be specially studied with a view to securing the best effect for the whole; no planning scheme can be considered as complete without a sufficiency of open spaces, and due regard must be paid to proportion and to architectural design.

TWO METHODS FOR SOUND-PROOFING HOUSES.

ONE of the chambers of the Amsterdam Royal Academy of Science has been made noise-proof in the following manner: The walls of the room consist of six layers, alternately of wood, cork and sand. There are two spaces, one between the second and the third layer, and one between the fourth and the fifth, from which the air has been extracted. The inner walls are of porous stone covered with a kind of horsehair cloth known as trichopiese, a Belgian invention, which is sound-resisting and is widely used in Belgium in telephone booths. The walls are pierced by acoustically isolated leaden rods. The roof is composed of layers of lead, wood, asphalt, paper, sea-grass and cork. The second method, which is cheaper, is suitable for apartments. It consists of sheathing the partition studs with tin or aluminum. This idea is of German origin and was used first in lining wooden telephone booths.

DETAIL FOR SCOTTISH RITE CATHEDRAL.
Winkle Terra Cotta Company, Makers.
Jones & Furbringer, Architects.

CATHEDRAL AT WESTMINSTER.

THE great cathedral at Westminster, England, which was recently consecrated, is considered by many to be the "most original building of modern times." It is built in the early Christian Byzantine style. The interior is adorned with the mosaics with which it is proposed to cover all the walls similar to those of St. Mark's in Venice. The cost, exclusive of the site, was $1,500,000. The dimensions of the cathedral are as follows : Exterior — extreme length 360 feet, width 156 feet, height of nave 117 feet, height of campanile (St. Edward's Tower) 273 feet, and to the top of the cross 284 feet; interior — length 342 feet, width of nave with aisles 98 feet, height of main arches of nave 90 feet, and of the domes 112 feet. The area of the whole building is 54,000 square feet.

HOUSE AT GRAND RAPIDS, MICH.
Faced with "Ironclay" brick, made by Ironclay Brick Company.
Williamson & Crow, Architects.

ARTIFICIAL LIGHTING FOR SCHOOLHOUSES.

A SERIES of tests was recently conducted for the Board of Education of Newark to determine the best form of lighting for schoolrooms. The rooms in which the experiments were tried measured 22 by 34 feet, and were 12 feet high. Three systems were tried, consisting of twenty-two 16-candlepower

DETAILS FOR FILTER PLANT BUILDING, PHILADELPHIA.

Executed in terra cotta
by
Atlantic Terra Cotta Company.

lamps, five 75-candlepower graphitized filament lamps, and five 100-watt tungsten lamps with glass reflectors and frosted tips. The tungsten lamps were the most economical and gave by far the best light at each desk, as was determined by illuminometer readings. A similar investigation has been made in Boston, where it was suggested that the room be lighted by lamps placed along the side walls just under the ceiling in boxes with prismatic glass bottoms, which would cast the rays into the room at the desired angle. — *Scientific American.*

DETAIL OF APARTMENT HOUSE, RIVERSIDE DRIVE, NEW YORK CITY.
Executed in white mat terra cotta by New York Architectural Terra Cotta Company.
G. Ajello, Architect.

EIFFEL TOWER.

THE Eiffel Tower, Paris, which is 300 meters high, has been observed by scientists to contract during the day and expand during the night. They attribute this to the effect of the sun upon the iron with which it is constructed. In summer the tower twists itself in such a manner that by sundown the lightning rod at the top leans eastward. In the winter it points westward. By dawn next day the rod is vertical again. The tip of the lightning rod leans from the plumb-line, a distance of from about 1½ inches to as much as 8 inches. Recent observations have shown that the tower's habit of twisting in different directions does not increase with age and there seems, therefore, no danger of its falling.

CONSTRUCTION OF EXHIBITION BUILDINGS.

THE recent destruction of art treasures by fire at the International Exhibition at Brussels will undoubtedly act as an incentive to a better class of buildings in the future. In fact, fireproof construction will be necessary for housing works of art if exhibitors expect to secure valuable material from the various countries. Already a motion has been introduced by a Paris municipal councilor forbidding the city of Paris to lend a work of art under any circumstances. The Lille Museum is considering a similar rule. Such action will become universal unless absolute protection is assured to all donors.

BUILDING OPERATIONS FOR AUGUST.

THE statistics as compiled by *The American Contractor*, New York, show a gain in twenty-five cities of from 3 per cent to 199 per cent; others showing a loss of from 3 to 69 per cent. Cities scoring a gain over 50 per cent are: Baltimore, 158; Birmingham, 85; Columbus, 123; Louisville, 114; Manchester, 59; Nashville, 199; New Haven, 89; Portland, Ore., 156; Toledo, 84. The United States Steel Corporation is to build a branch plant at Duluth and has taken out a permit to erect the first forty-eight buildings at an estimated cost of $10,000,000.

A NEW office building has been designed by D. H. Burnham & Co., architects, for the People's Gas Light & Coke Company, Chicago, Ill. This building will be twenty-one stories high, having a frontage of 196 feet on Michigan avenue and 172 feet on Adams street. It will accommodate fifteen hundred offices and cost approximately $6,000,000 when finished. The exterior will be of granite and glazed terra cotta. The two main façades will have a colonnade of eighteen monolithic columns, each of which will be 4 feet 3 inches in diameter and 26 feet 6 inches in height, weighing thirty tons. The building will be absolutely fireproof.

COLUMBIA UNIVERSITY announces a course of lectures by Edward R. Smith, Reference Librarian, Avery Library. This course will cover the entire development of the fine arts among European peoples. The history of art will be shown not so much in the succession of monuments as in the development of style. The

ANDERSON GARAGE, CHICAGO, ILL.
Of white enameled terra cotta furnished by the Northwestern Terra Cotta Company.
Jenney, Mundie & Jensen, Architects.

course is intended to be entirely simple and elementary, giving the general information on the history of art, which should precede special and critical study. There will be thirty sessions beginning October 8th.

THE scholarships of the Architectural League of America in Harvard University have been awarded to Robert Finn and Henry Jansen of Detroit, and Frederick Larsen of Boston, with Ernest Hayward of Somerville, Mass., as alternate. Thirteen drawings in all were submitted in the final competition. The teaching staff of the Department of Architecture of Harvard University and Edmund Wheelwright of Boston formed the committee of award.

NEW BOOKS.

Italian Brick Architecture of the Middle Ages and the Renaissance. A new book by H. Strack. 47 plates size 14½ x 20. Price portfolio, $8. Bound, $11. New York, William Helburn.

A Primer of Architectural Drawing — for young students. Twenty-five problems, each illustrated by a plate. One hundred and sixty-one explanatory detail figures, 154 pages. Pocket size, by Wm. S. B. Dana, B.S. (Massachusetts Institute of Technology). Cloth, price $1.25. New York: William T. Comstock.

COTTAGE FOR PARENTAL SCHOOL, MAYFAIR, ILL.
Roofed with interlocking shingle tile made by Ludowici-Celadon Company.
W. B. Mundie, Architect.

IN GENERAL.

Lyman A. Ford and Leslie Allen Oliver, formerly of the architectural firm of Ford, Stewart & Oliver, have formed a co-partnership with Lawrence Smith Butler for the practice of architecture under the firm name of Ford, Butler & Oliver. Offices: 103 Park avenue, New York City.

DETAIL BY E. F. GUILBERT, ARCHITECT.
South Amboy Terra Cotta Company, Makers.

Elmo Cameron Lowe and J. Carlisle Bollenbacher have formed a co-partnership for the practice of architecture, with offices at 1612 Corn Exchange Bank Building, Chicago.

Luther Morris Leisenring has opened offices for the practice of architecture at 1320 New York avenue, N. W., Washington, D. C.

Henry Auerbach has opened offices for the practice of architectural engineering at 90 West street, New York City. Manufacturers' catalogues and samples solicited.

D. H. Perkins and J. L. Hamilton, architects, have removed to their new suite, 1100 Straus Building, 132 Clark street, Chicago.

Frank C. Walter, formerly of the architectural firm of Edwards & Walter, has established offices for the practice of architecture at 502 3 Forsyth Building, Atlanta, Ga.

Richard H. Marr announces that he has opened an office at 1529 Ford Building, Detroit, for the practice of architecture.

The "Tapestry" brick for the house at Oyster Bay, Long Island, illustrated in this issue, was furnished by Fiske & Co., Inc.

A Town Planning Conference will be held in London from October 10 to 15, 1910, under the auspices of The Royal Institute of British Architects.

The restoration of the Palace of the Popes at Avignon is steadily proceeding, and numerous interesting archæological discoveries are being made. The apartment called the "Salle des Audiences" is now completely restored, and in the chapel the stained glass which was

DETAIL BY T. H. POOLE & CO., ARCHITECTS.
New Jersey Terra Cotta Company, Makers.

destroyed during the occupation of the building as a barracks has been replaced according to its original design. The municipality of Avignon is occupied with the restoration of the ancient battlements extending along the bank of the Rhone between Porte Saint-Dominique and Porte de l'Oulle.

NOTICE TO ARCHITECTS. (Competition.)

The Confederate Memorial Association has instructed its Executive Committee to receive Competitive plans for a memorial building in Richmond, Va., to be known as the "Confederate Memorial Institute." The Committee has engaged a firm of architects to act as expert advisers in the preparation and award of the competition.

Cost of building to be $150,000.
Prizes ranging from $1,000 to $200.

Architects desiring to compete should apply for conditions of competition on or before September 30, 1910, to Hon. J. Taylor Ellyson, President Confederate Memorial Association, Richmond, Virginia.

Program for The Brickbuilder Annual Terra Cotta Competition, page 242

THE BRICKBVILDER AN ARCHITECTVRAL MONTHLY

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NO. 10

PVBLISHED BY ROGERS & MANSON
EIGHTYFIVE WATER STREET BOSTON MASS.

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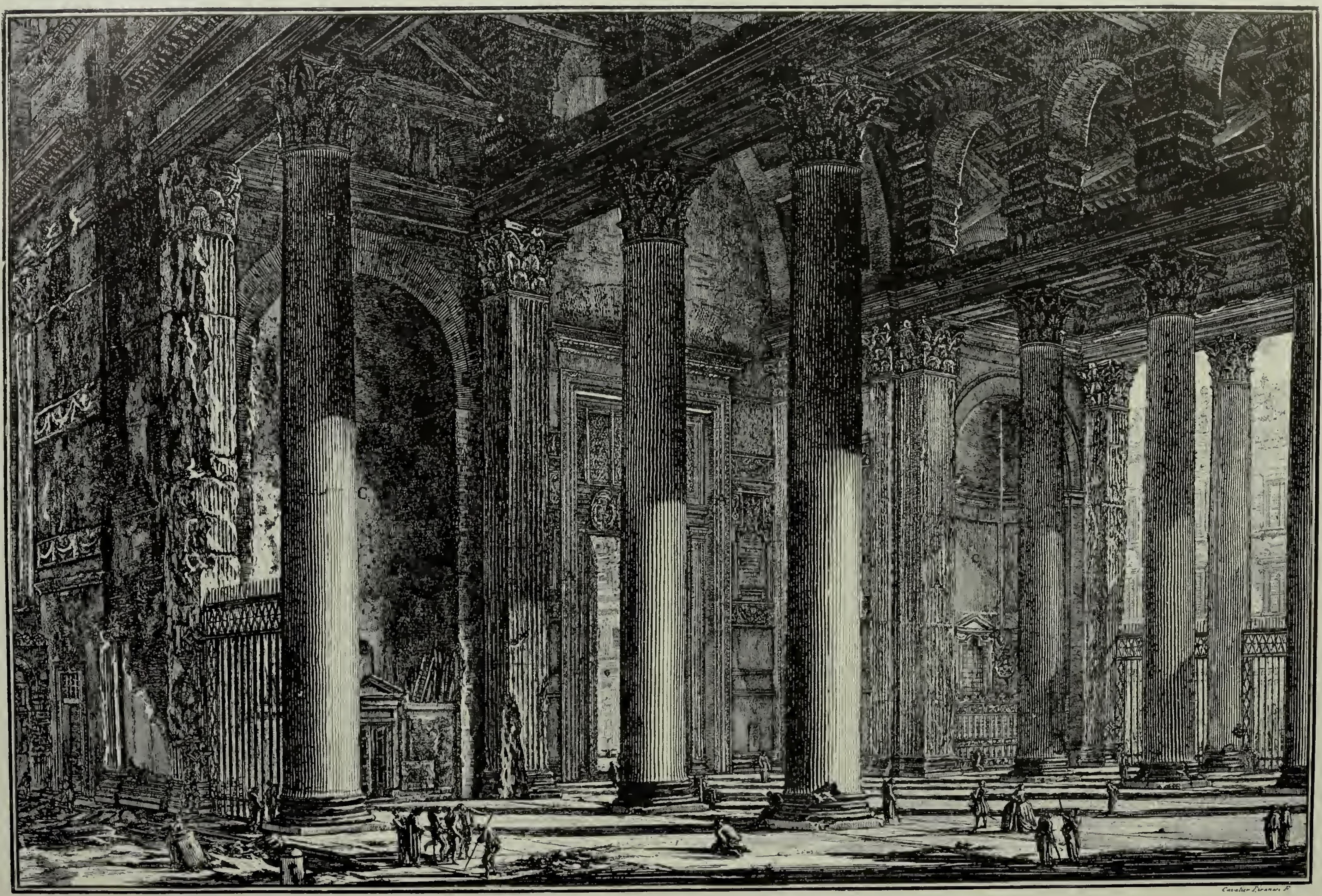
EDWARD G. GARDEN; PERKINS & HAMILTON; JAMES PURDON; LOUIS SULLIVAN; H. R. WILSON.

LETTERPRESS



COLUMNS OF THE PORTICO OF THE PANTHEON, ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

The Pantheon, Roman temple of all the gods, the best preserved monument of ancient Rome, dates from the time of the Emperor Hadrian (117-138 A.D.) although the columns of the portico which are here engraved by Piranesi are believed to date from the original building on the site erected by Agrippa (27-25 B.C.). There are sixteen columns of Egyptian granite (46½ feet high, 5 feet in diameter). In the large niches stood colossal statues of Augustus and Agrippa. The only light admitted to the interior comes through a circular opening 24 feet in diameter in the top of the domed ceiling. The walls are 20 feet thick, faced with brick 1½ inches thick, laid in mortar ½ inch thick. The building became a Christian church in 608. It contains the tomb of Raphael.

THE BRICKBUILDER

VOL. XIX. NO. 10. OCTOBER, 1910.

Hints on Architectural Acoustics.

BY HUGH TALLANT.

PART II. (CONTINUED).

COMPUTATION AND PRACTICE.

AS ENUMERATED in the September number of THE BRICKBUILDER, the principal acoustic defects are *insufficient or excessive loudness; indistinctness due to interrupted reverberation; indistinctness due to sound-interference; echo;* and *insufficient or excessive reverberation.* It has already been shown that the first three defects result mainly from conditions at the *front* of the auditorium, and may be remedied by arranging the side walls and ceiling in the form of a scientifically-shaped megaphone. The fourth defect, indistinctness due to sound-interference, results mainly from conditions at the *back* of the auditorium, and may be remedied by preventing the rear wall from deflecting sound into the audience. The obvious means of accomplishing this result is to cover the rear wall with sound-absorbing material. All textile fabrics are good absorbents, but the best results are obtained from hair-felt set out a couple of inches from the wall. The absorbing capacity is lessened if the felt is placed closer to the surface behind it. Unfortunately the decorative effect of this material leaves much to be desired, and considerable ingenuity is often required to disguise its unsightly appearance. In one well-known case a fine mesh has been stretched above the felting, and marked off in imitation stone-joints. The effect is said to give satisfaction, although scarcely a sincere expression of the means employed. However, there seems no valid objection to covering the felt with some one of the burlaps, tapestries, brocades or other textile wall coverings which have recently come into such extensive use. The absorbing capacity thus obtained is over eighty per cent, or amply sufficient for all practical purposes. The material may be either tacked on battens secured at proper intervals to the wall, or it may be stretched on loose frames and disposed in the form of panels in a strip wainscot. In the latter case if the alternate stiles are made movable, as suggested in Fig. 24, the panels can be removed for cleaning — often a consideration of some moment.

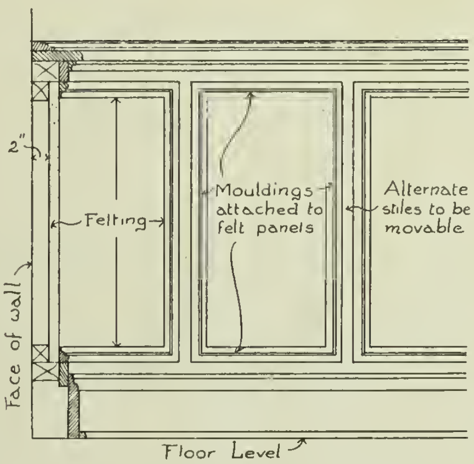


FIG. XXIV.

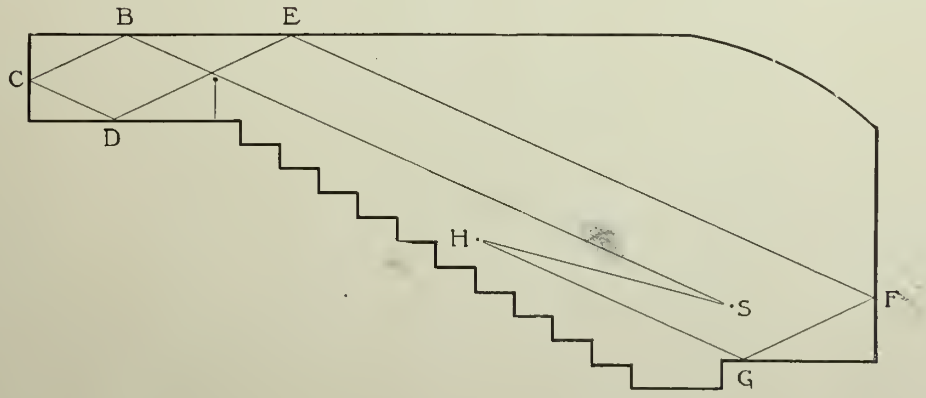


FIG. XXV.

As a rule, however, the covering of large wall surfaces in the manner described is inconvenient as well as expensive, and other expedients for preventing sound-interference are to be preferred. It is well to begin by reducing the exposed area of the rear wall to a minimum. This may be accomplished by stepping up the floor toward the back of the auditorium as shown in Fig. 25, a procedure which is of benefit to the sight lines as well as to the acoustics. In this connection it may be noted that the better an audience can see the speaker the better they will hear him. An uninterrupted line of sight presupposes an equally clear path for the direct sound, and anything that promotes the former will subserve the latter. For instance, the so-called *isacoustic curve* obtained by increasing the heights of the steppings as they recede from the speaker, is of distinct acoustic as well as visual advantage, because it raises the occupants of the rear seats clear of the sound-shadows cast by those in front. The curve is difficult to realize in a balcony, but may almost always be obtained on the main floor. The precise curvature which gives the best results is of somewhat complicated design, but a close approximation may be obtained by increasing the heights of the risers in arithmetical progression. Where the speaker's platform rises some 3 feet above the adjacent floor the first stepping should be about 2 inches high. If the platform is lower the front riser should be higher. The successive heights of the following risers may be determined by making the common difference such as to bring the top stepping to the desired height. The curve thus obtained is a little too flat, but will serve the purpose in ordinary cases.

If possible, the floor at the rear of the auditorium should be so high that the first sound SB, Fig. 25, which escapes above the shoulders of the audience, will strike the ceiling before it can reach the rear wall. This will cause every sound which strikes the rear wall to be deflected to the floor (or possibly to the backs of the last row of seats) before it can reach the ears of the audience. If the floor is carpeted the sound will be largely destroyed by the impact, but in any case what is left of it will take such a path as DEFGH, and, when it finally does reach the audience, will be moving almost parallel to the direct sound, which it will tend to reinforce rather than to counteract. At the same time, in a megaphone-shaped auditorium this deflected sound may easily reach the audience at H so long after all other parts of the same sound-wave as to threaten an echo. For this reason it is wise to cover the floor behind the last row of seats with extra heavy carpeting so as to absorb as much of this dangerous sound as possible.

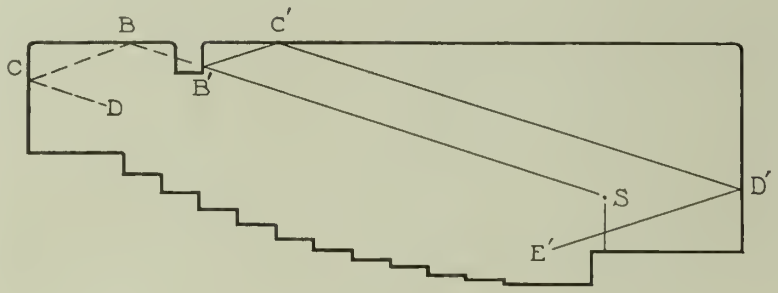


FIG. XXVI.

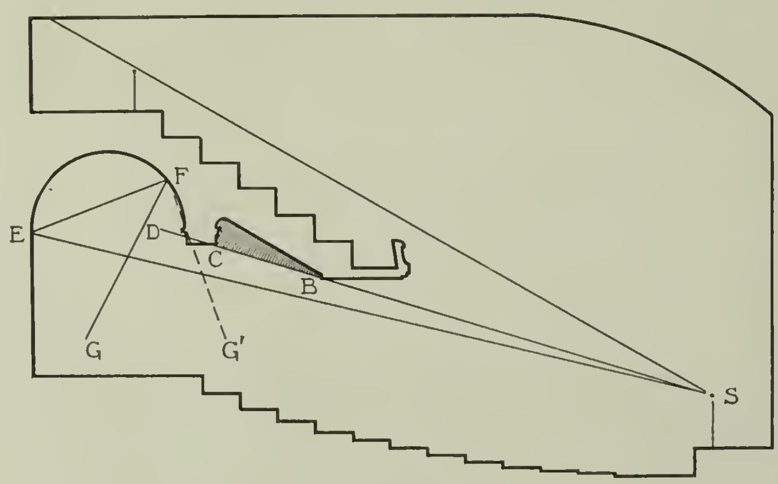


FIG. XXVII.

This expedient is often effective at the rear of a balcony, but, as will be seen from Fig. 25, it involves a height of steppings which is excessive for the main floor. Where this proves to be the case, the same result may sometimes be attained by the introduction of a false beam, as shown in Fig. 26. A sound which would otherwise cause interference by moving in the path SBCD will be intercepted by the beam at B′ and deflected into the audience in the direction D′E′. This procedure is, of course, open to the same objection as the preceding one, and must be carefully checked for echo in the case of a megaphone-shaped auditorium.

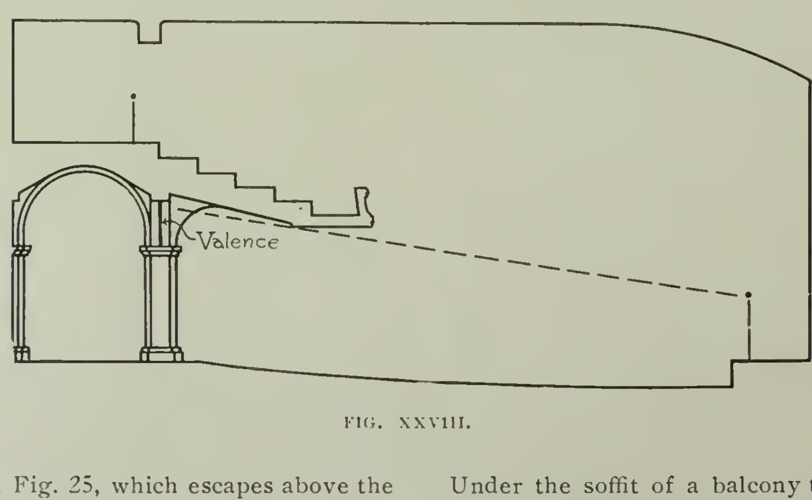


FIG. XXVIII.

Under the soffit of a balcony the conditions are more tractable, and a false beam may often be inserted with impunity as well as advantage. This is owing to the fact that the overhang of the balcony intercepts the direct sound in such a way as to cast a broad band of sound-shadow, as indicated in Fig. 27, while at the same time the audience below absorb all the deflected sound. Under these conditions no sound can reach the front face of the beam so long as it is kept within the limits of the shadow, and there can be no danger of echo if the corner C does not protrude below the contour SBD of the shadow.* By carrying up the ceiling behind the beam in the form of a high barrel-vault, as indicated on the diagram, practically all the sound that escapes above the shoulders of the audience may be harmlessly deflected to the carpet by some such path as DEFG, instead of causing serious interference at G′.

FIG. XXIX.

Where the slope of the balcony is slight, as shown in Fig. 28, the above expedient cannot be employed because the overhang does not cast a sufficient shadow. In this case the barrel vault should be replaced by a groined vault carried on arcades. The arches above the impost can then be filled with a heavy valence which will absorb the sound which strikes it from either side. What little sound passes between the audience and the lower edge of the valence will be immediately dissipated under the vaulting beyond. Fig. 29 gives a general view of the construction employed for this purpose in the New Amsterdam Theatre, while Fig. 30 shows a single arcade and valence. In this case a series of irregular domes on pendentives was employed instead of a groined vault. A simpler means of obtaining the same result is shown in Fig. 31. This last arrangement has the advantage of utilizing such sounds as SBA to reinforce the direct sound SA at the very point where reinforcement is most needed. It is convenient and presents a simple decorative effect where the balcony has only a slight projection, but it cuts down the headroom at C to a disagreeable extent if the overhang is large.

All of the above methods of preventing sound-interference may often be required in a single case. Fig. 32 is taken from the preliminary layout for a theater where the first expedient is being employed on the upper balcony, the second on the lower balcony, and the last on the main floor. The reader's ingenuity will doubtless suggest other architectural devices for accomplishing the same result.

FIG. XXX.

The fifth defect, *echo*, is really an exaggerated case of interrupted reverberation, being merely the return to the audience of a certain sound or group of sounds after the rest of the reverberation has very largely died away.

This may be simply illustrated by the example of an ordinary corridor. The listener at A, Fig. 33, hears at first a succession of sounds beginning with the direct sound and followed by others deflected one or more times from the side walls XY and ZW. These sounds grow rapidly fainter, partly because of the increasing length of their paths, and partly because of the additional number of impacts against the side walls. Suddenly, however, there arrives a great accession of tone caused by the

*Theoretically the direct sound has a slight tendency to spread sideways into the space above the line SBD. It is well known that on the exact contour of a shadow the sound still retains a quarter of its intensity. This fact is of no practical importance in this connection.

return of the sounds deflected from the end wall, WX; and the shock is accentuated by the fact that the newcomers have been deflected a relatively small number of times, and therefore have been comparatively little weakened by impact and absorption. Of course if the corridor is less than 40 feet long the sounds from the further end will return before a perceptible interval has elapsed, but otherwise the result will be a loud and prolonged echo.

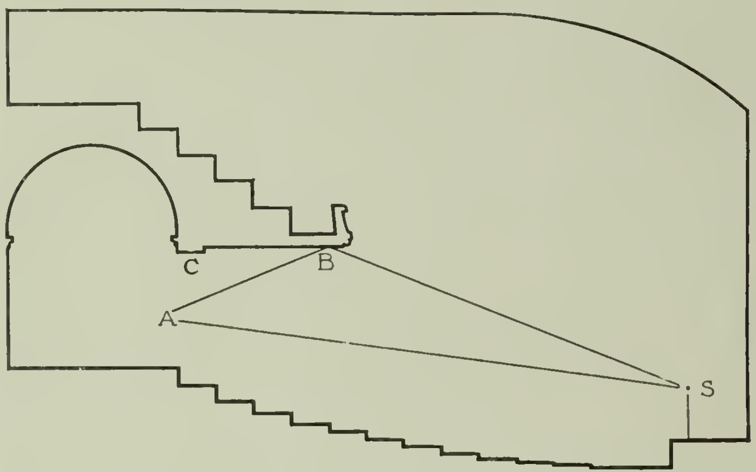


FIG. XXXI.

As, however, all the sounds causing the echo must strike the end wall before returning to the listener at A, they can all be destroyed and the echo prevented by applying an absorbent to the end wall. In this case the effect will be that of a single sound accompanied by a rapidly fading reverberation. On the other hand, if the absorbent be applied to the side walls and not to the end, it will permit only two sounds to reach the hearer, namely, the direct sound traveling in the path SA and the deflected sound traveling in the path SBA. In this case the effect will be that of an initial sound and a sharp distinct echo without accompanying reverberation. It therefore appears that the position of the absorbent is of prime importance and that totally different effects may be produced in the same building by an alteration in the position of the absorbents with relation to the speaker.

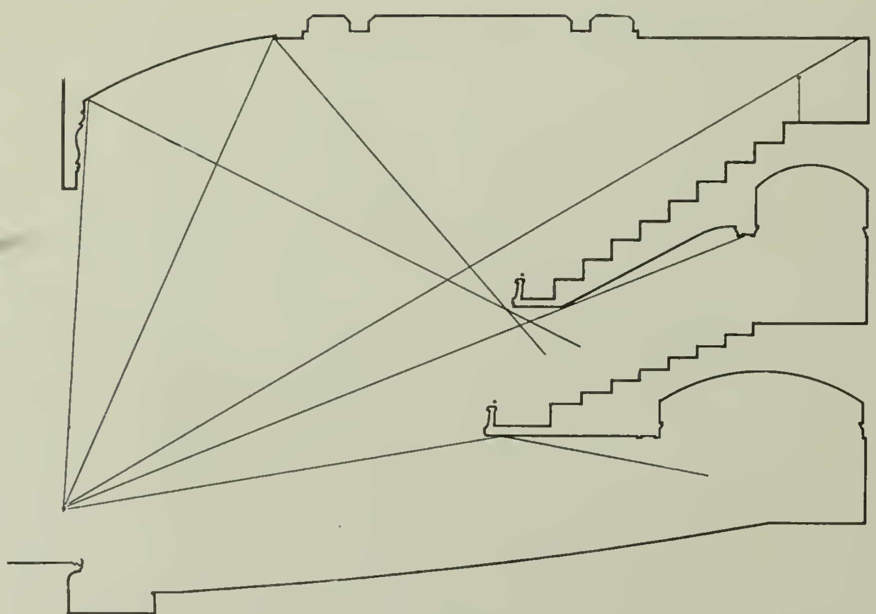


FIG. XXXII.

The example just quoted is typical of the general conditions which produce echo in an enclosed space. The same train of reasoning may readily be applied to other similar cases. For instance, a semi-detached room at a distance of 40 feet or more from the hearer may develop an echo if the reverberation lasts longer in the room than in the hall. The difficulty can be readily overcome by increasing the absorbing-capacity of the room.

The conditions under which echo is produced by a dome have already been fully discussed. Where, for decorative reasons, the dome cannot be flattened to such an extent that echo is impossible,* the only alternative is to cover its entire surface with felting. Apparently under favorable conditions the central portion BD, Fig. 34, might be left unprotected and used with advantage as a deflecting surface, but the writer is acquainted with no precedent for such a treatment. Dangling wires or a fine silken mesh suspended at the base of the dome are sometimes used as absorbents, but their effect is only palliative.

The last defect, *insufficient* or *excessive reverberation*, is best treated by avoiding reverberation and depending as far as possible upon resonance for proper quality of tone. All reverberation tends toward confusion. In moderation it undoubtedly adds quality of tone, but an even better quality without the corresponding indistinctness can be obtained by means of resonance. This fact seems to have been known to the ancients and to have been considered in the construction of their auditoriums. One of the best restorations of a classic theater† is reproduced in Fig. 35. As will be seen, the speaker was placed so far below the top row of seats that all sounds which did not strike the audience rose at once into the open sky. In fact, such an auditorium is the perfection of the megaphone principle, the sloping sides of the amphitheater corresponding to the

* See THE BRICKBUILDER for August, 1910, page 178, Fig. 10.

† *The Theater of Ostia* from the drawing by Pierre André, as published by D'Espouy.

megaphone surface, while the heavens above furnish a perfect sound absorbent. No continuous deflection is possible under such conditions, and the complete absence of reverberation results in that marvelous distinctness and carrying power so often remarked, not only in ancient structures but also in modern amphitheaters, such as the Harvard Stadium* and the open-air theater at Berkeley.

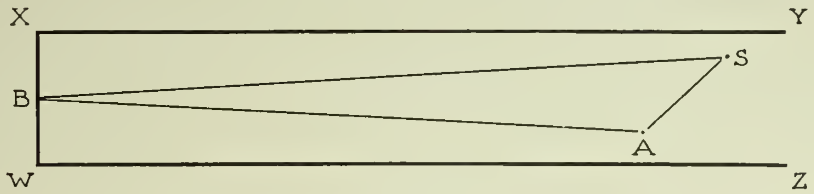


FIG. XXXIII.

At the same time this arrangement possesses the defects of its qualities, as the lack of reverberation naturally involves a distressing poverty of timbre. The Greeks, with their delicate sensibilities, did not fail to perceive this blemish, and had recourse to a surprisingly ingenious and scientific remedy. Their method was to distribute at regular intervals throughout their auditoriums what the modern text-books would call resonators. "These are hollow vessels whose air cavity has been carefully tuned to a definite pitch, and the air in which, therefore, is readily thrown into vibration by a note of the same period. The older resonators were spherical, but the later ones are cylindrical in form. If the sound to which the resonator is tuned exists in the air in the vicinity, it will be reinforced and become audible."† The ancient resonators consisted of vases, generally bronze but sometimes earthenware, which were disposed in niches hollowed out between the theater seats. These niches are still in evidence at Taormina, where they are contrived in the dwarf wall on which the columns of the upper gallery stood.‡ The vases were set with the orifice downward, like a bell, and were carefully wedged up so that their vibration might not be checked by contact with the masonry. The Greeks were well aware of the principles of sympathetic resonance, and knew that a resonator would respond only to tones of the precise pitch with which it was in unison. They were, accordingly, at extreme pains to attune their vases with mathematical precision so that there would be vases to respond to tones of every pitch, and also to arrange the vases in regular order so that those which corresponded to any particular pitch might be evenly distributed. In a small theater there was usually only one row of these vases, placed half way up the incline of the seats, but in more important structures there were sometimes as many as three rows, dividing the auditorium into four equal parts, and the size of the vases was further proportioned to the size of the house. In this way the lack of reverberation was offset by a proper amount of resonance evenly dispersed among the audience, and requisite quality was given to the musical tones.

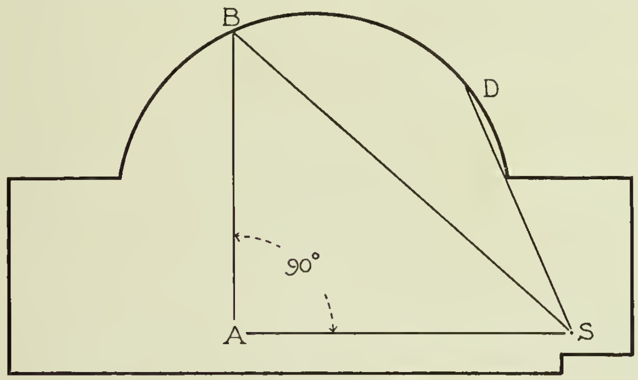


FIG. XXXIV.

The foregoing description is, of course, transcribed from the well-known account of Vitruvius (V. 5), which also contains an introductory chapter on the principles of musical harmony according to which the vases were attuned. Unfortunately there is no mention of any precise method for computing the number and size of the resonators, so that we do not know whether the Greeks had established any mathematical relation between the dimensions of an auditorium and the quantity of resonance required. Moreover the Greeks were ignorant of the third as a musical consonance,§ and consequently their method of tuning would probably be imperfectly adapted to a musical system based, like our own, on the major and minor triads. Nevertheless the example of the classic theater is of extreme interest and value, as indicating that the ancients had arrived at a perfect solution of their own acoustic problem by depending wholly upon resonance for quality of tone.

FIG. XXXV.

*This fact was amusingly demonstrated at the opening of a recent Harvard-Yale football match. At the very moment of putting the ball in play — when every voice was hushed in the tense excitement — someone high up on the bleachers saw fit to unbosom himself of the trite remark, "Oh, cut it out!" Instantly a ripple of laughter spread throughout the entire stadium, showing that the admonition, although expressed in an ordinary tone of voice, had been simultaneously understood by 20,000 spectators.

† Barker, Physics, pages 250, 251.

‡ See the *Encyclopædia Britannica*, Vol. XXIII., pp. 222 and 223.

§ See *What is Music* by Isaac L. Rice, Chapter VI., page 14.

Inexpensive English Houses which Offer Suggestions.

BY HENRY A. FROST.

OF ALL the problems given an architect to solve few are capable of such a wide range of expression or possess greater possibilities of treatment than the small house. While affording him much trouble and little profit, it is at the same time a problem which exerts upon the community, and upon the country at large, an important influence. As a beautiful church or an imposing public building raises the tone of a city square, so it remains for the houses of the people to make upon a visitor the lasting impression that will cause him to look back upon the city as a desirable place in which to live. Any problem vitally affecting life, and the mode of living, assumes greater importance to the mind than does the contemplation and enjoyment of a purely extraneous work of art.

The problem of the well designed house, therefore, is one of first importance. In the congested districts, where many families must live within very limited areas, where every foot gained is money saved, and where numberless city ordinances are imposed, the housing problem becomes very complex. Little wonder then if the results tend to show a surprising uniformity and lack of interesting features. In such problems whatever genius the architect may have had, is too often swamped in a sea of requirements. But in the suburbs and in the smaller towns, where more space can be had, even though the lot be limited, the opportunity for individuality is great. Within recent years individuality has meant simply difference, for it has not been realized that a house might possess such a quality and still not be strikingly at odds with its neighbors. On the other hand it has been felt necessary to make the house entirely different from those surrounding it. But individuality not accompanied by a strong sense of fitness becomes mere eccentricity.

The truly successful house, to possess individuality, must harmonize its surroundings, not subordinate them. That there are at present so many houses possessing this desirable quality is due largely to the fact that the fascination which the problem has for the architect causes him to labor far beyond the point where it may be counted profitable. In return for his sacrifice is the satisfaction of knowing that one spot in an otherwise uninteresting neighborhood has been made attractive, that another step has been taken toward the beautification of the American town. It is beginning to be understood that the beauty of the New England colonial village was gained by the very means which later were so conscientiously shunned — truth of expression.

It is but natural to turn for suggestion in this matter to the country from which the American colonists drew their inspiration, and where the expression of the home has always been beautiful. The same straightforward simplicity of the English house, which influenced the colonial builders so profoundly in all their work, excites our admiration now. In the success of these houses the use of local materials, often employed for reasons of economy rather than from an appreciation of their beauty, plays an important part. For the same reason, in New England, with the increasing scarcity of wood, brick, as a local material, easily obtainable, seems to be a happy choice.

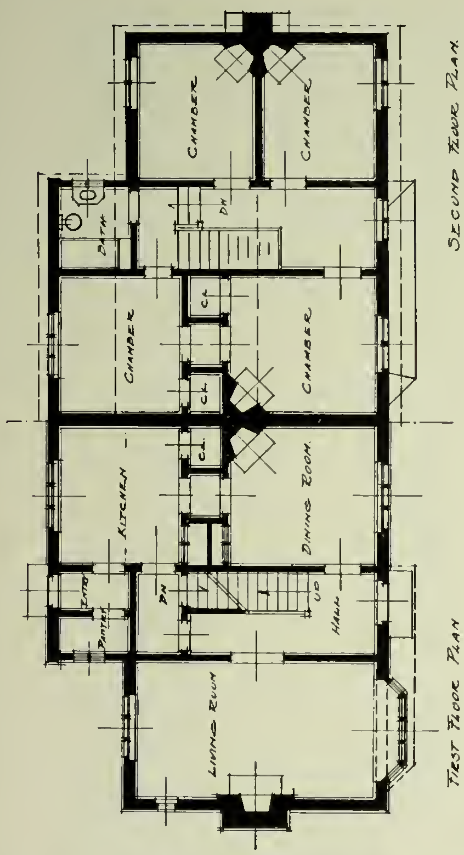
A small house, generally speaking, presupposes a moderate income. While this by no means necessitates cheapness of construction it naturally suggests simplicity and a straightforward use of materials. These very limitations are often its salvation, and make the small house in many instances far more successful than its more pretentious neighbors, where wealth finds an outlet in over-elaboration.

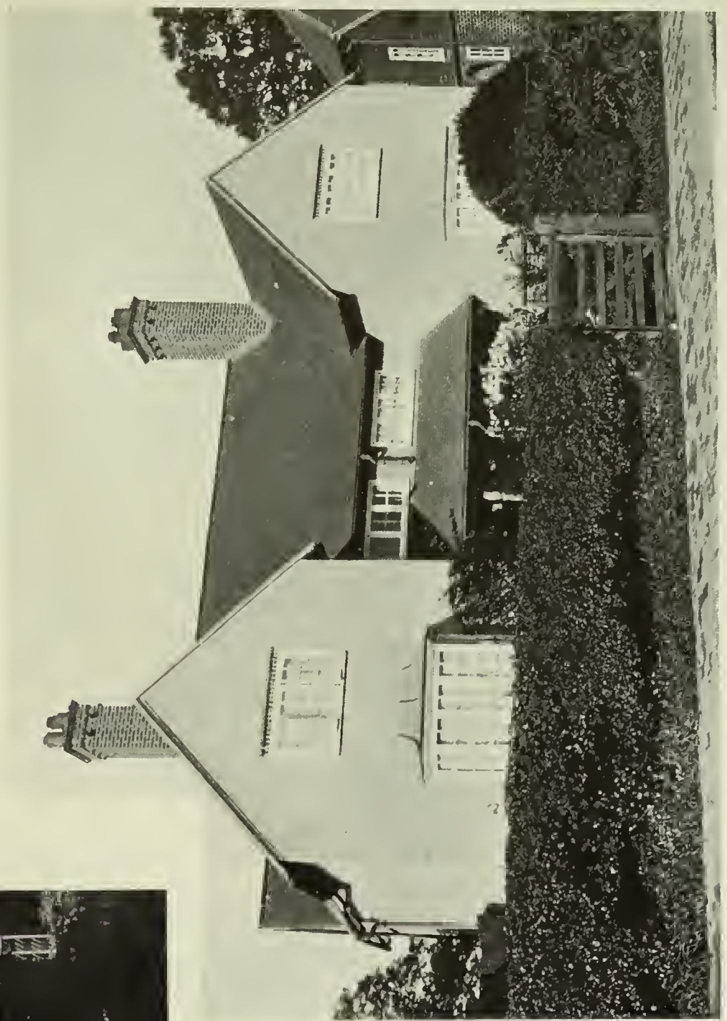
Of the houses here shown, three are single, and three are double. They all have brick as the basis of construction. In some it is allowed to show only as high as the first story window sills, in others it shows to the level of the second floor, and in one example the exterior walls are entirely covered with stucco. In England many single and double houses such as these are built for investment, and again, as in this country, by men of limited means, who desire to own a home, but hesitating to tie up so much capital, find a way to compromise by renting one-half of their house in order to pay interest on their investment, while their own rent consists of taxes and repairs.

The houses, it will be seen, are of extreme simplicity, and would appear bare were it not for generous planting. Given a good wall surface and a few well spaced, well proportioned openings, an interesting roof, and in the less expensive work, few dormers — often a fortunate omission — and an Englishman is content to overcome any suggestion of baldness with shrubbery, hedges and climbing vines. As a result one is struck first, not so much by any intrinsic beauty of the house alone, as by its perfect fitness to its surroundings. For the house is made to fit the surroundings, and they in turn are improved, to set off the house.

Sketch plans of the houses are shown. They have been changed somewhat with an idea of suggesting how easily the work is adaptable to American needs. Such changes are chiefly in the service portion of the house, where the requirements of the English differ from thosc of Americans. The double house near Horsham, with the brick lower story, the plaster and half timber work above, and the roof of heavy slates, recalls in its plan the old colonial houses, particularly some of those still found in Connecticut. The hall, running through the center, opens on the one side into the living room, on the other, into dining room and kitchen.

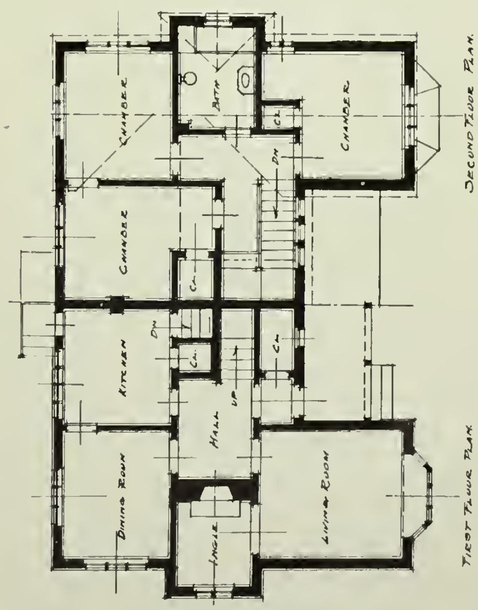
In the actual house it is quite possible that the living room does not run the full depth, for English houses of this general type seem, as a rule, to prefer two small rooms instead of one large one. Perhaps this is due to inefficient methods of heating during the cold seasons. In an English house of this size, also, it is not unusual to reserve one end of the living room for a dining alcove, or if there is a separate dining room, to place the kitchen across the main hall from it. A bathroom and either a maid's room or a sewing room are provided on the second floor plan as opening off the stair landing three steps

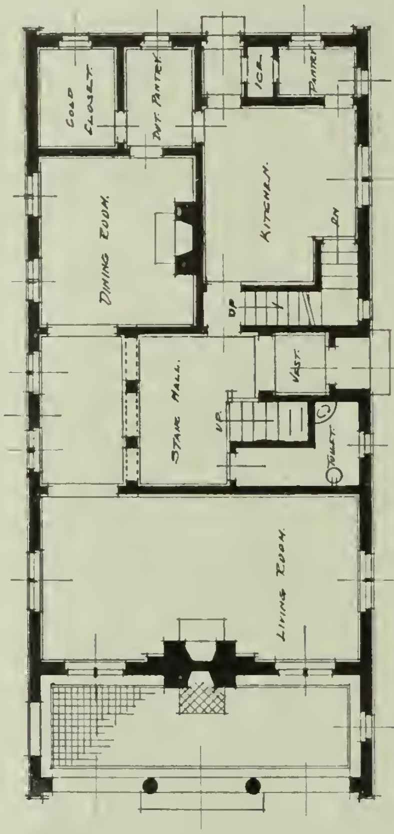




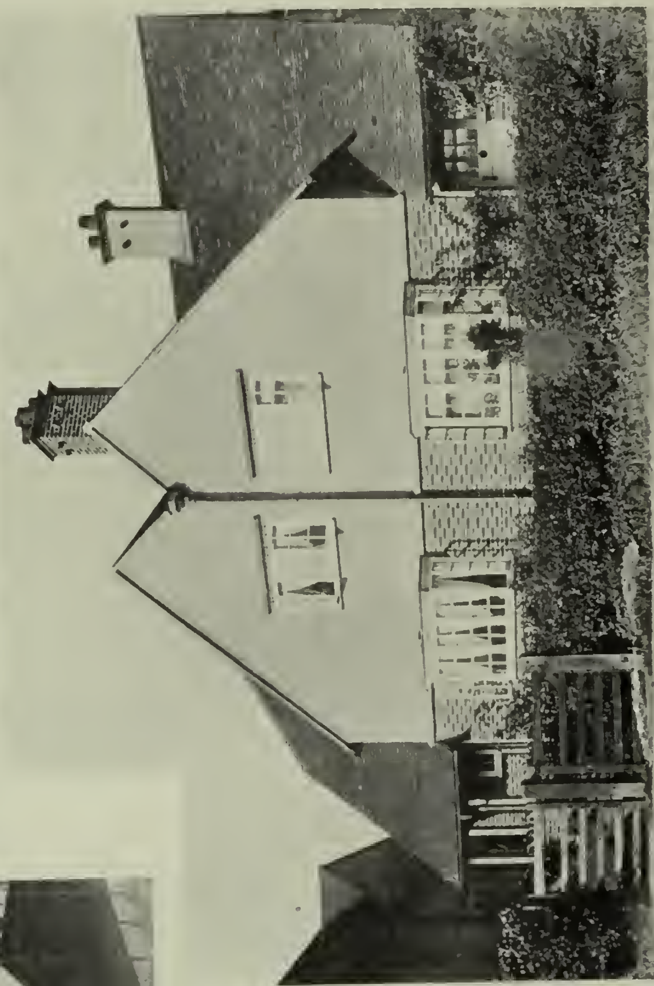
MODERN TWO FAMILY HOUSE, CUCKFIELD, SUSSEX.

MODERN TWO FAMILY HOUSE AT HORSHAM, SUSSEX.

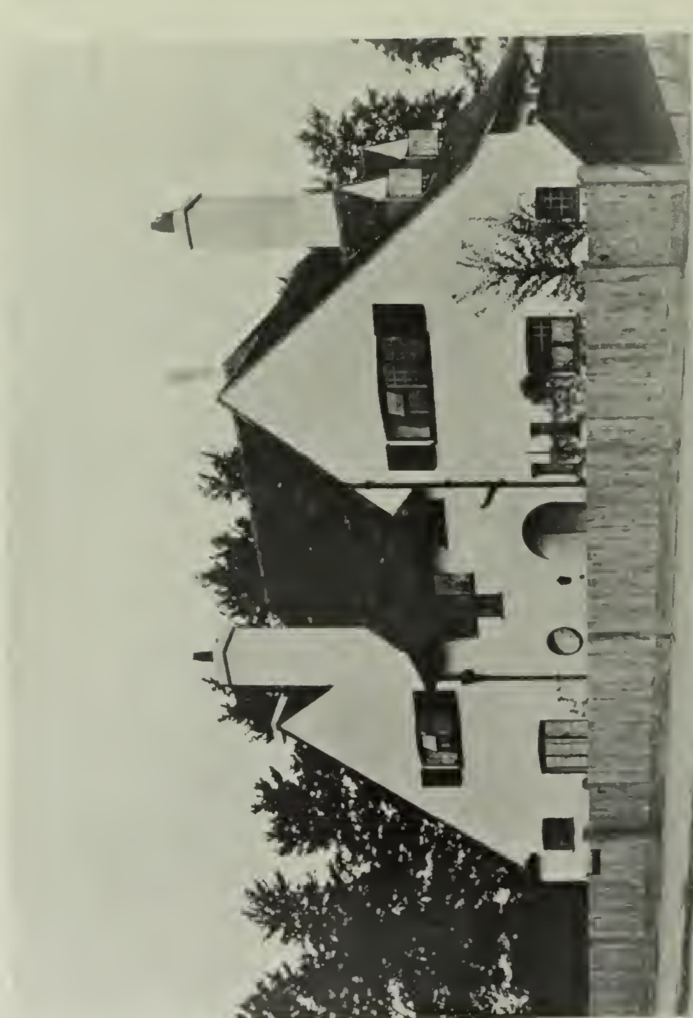




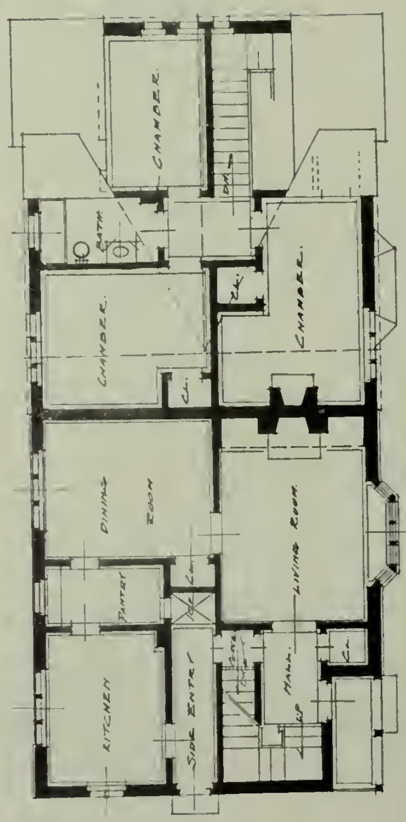
FIRST FLOOR PLAN.



MODERN TWO FAMILY HOUSE, CUCKFIELD, SUSSEX.

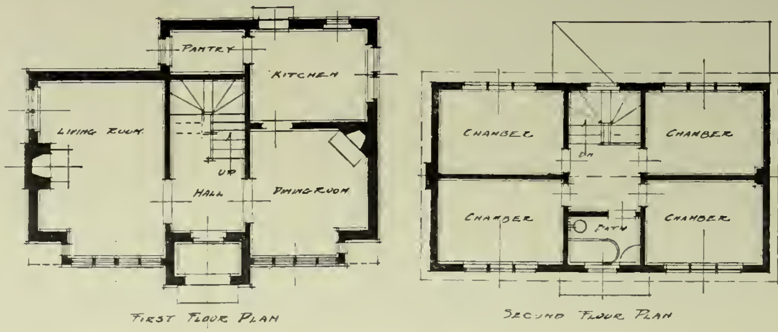


MODERN HOUSE AT WOKING, SURREY.

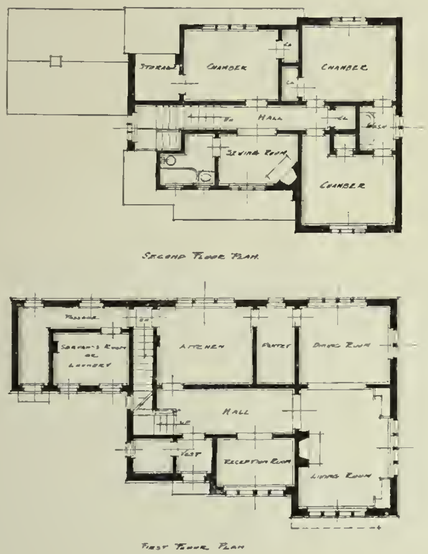


FIRST FLOOR PLAN

SECOND FLOOR PLAN.



MODERN COTTAGE, NEAR WOKING, SURREY.



MODERN COTTAGE,

DYMCHURCH,

KENT.

below the main second floor. This may be regarded as a makeshift, though it is an arrangement with some advantages.

In the smaller English houses, specially such as are found in the country, bathrooms are not usually under the main roof, and cellars are almost unknown. The attempt to provide these conveniences as in the Horsham house causes at times more or less departure from the original plans. The attic in this house is of use only for storage and ventilation. Such houses, with almost no breaks and a straight roof over all, with the simplest arrangement of rooms, are, of course, the least expensive to build, both from point of view of first cost and maintenance.

In the two houses at Cuckfield perhaps a more charming effect is obtained by a simple use of gables. In none has the mistake been made of trying to hide the fact that they are double. On the other hand, the truth has been emphasized, and the line of division is strongly marked, in one by a heavy chimney and conductor, in another by a leader from the divided gable, and in the third in a more subtle way, the line of division being felt rather than distinctly expressed.

The double house at Cuckfield, with its two projecting bays, offers rather an economical and convenient plan. In order to give a comfortable ingle, a bathroom resulted above, which is full ample for a house of this size. The extra space is not a matter of particular importance, as the three bedrooms are as many as could be accommodated on the floor. An attempt to add a fourth would result in cutting them all down to a size which would be very cramped.

If the kitchen and dining rooms were changed about all flues could be carried in one stack, thus effecting some saving. But the dining room would be darker and less attractive.

The second Cuckfield house works out well. Perhaps its greatest objection is that the dining room has to be approached through the living room, except, of course, for the service door through the pantry.

The chimneys deserve mention. In the three houses they differ radically, but in each the effect is gained by the simplest use of brick, tiles and chimney pots. The gates and the hedges around the two Cuckfield houses add much to the general appearance, and instead of giving the effect of cramping the houses, both of which are on small lots, the effect gained is one of greater spaciousness coupled with privacy.

Of the three single houses the one at Dymchurch, with its brick, stucco and half timber, is typical of the English shore cottage. That the charm of these cottages is much enhanced by their surroundings is strikingly evident here, where an otherwise attractive house loses much from lack of trees and planting. The contrast of timbers blackened by exposure, with plaster dead white, needs to be softened by generous foliage. The plan is similar in general arrangement to that of the double house at Horsham. The rooms, however, are smaller, and closet space is at a premium, as must be the case when a cottage of seven rooms occupies considerably less than 700 square feet. The disposition of chimneys permits fireplaces in nearly every room.

The two houses at Woking depend for their effect upon good lines, a charming grouping of windows and plain wall surfaces. The plans as shown, with their slight adaptations, are but little changed from the original. The larger house is perhaps a trifle pretentious for the rest of the houses treated in this article. The separate service stairway, maid's room, and the large living porch all mark it for a more expensive house. It cannot, however, be considered extravagant. It merely contains the elements of the other houses carried a little farther.

The smaller of the Woking houses, on the other hand, may well be considered in proportion to its size the most expensive of the six. It approaches the extravagant, with its generous use of gables and dormers. It is also, perhaps, the most picturesque.

The chimneys again are worthy of study. Many houses, otherwise uninteresting, have been saved from stupidity by their judicious use, while others of much excellence have suffered from their haphazard, unstudied positions. In English work such a failing is rarely encountered.

Examples such as these could be produced without number, all showing the same beauty of treatment, the same harmony of the parts with the whole, and the whole with its surroundings, which makes England deserve the name of the country of beautiful homes.

Burnt Clay's Share in the Rebuilding of San Francisco.

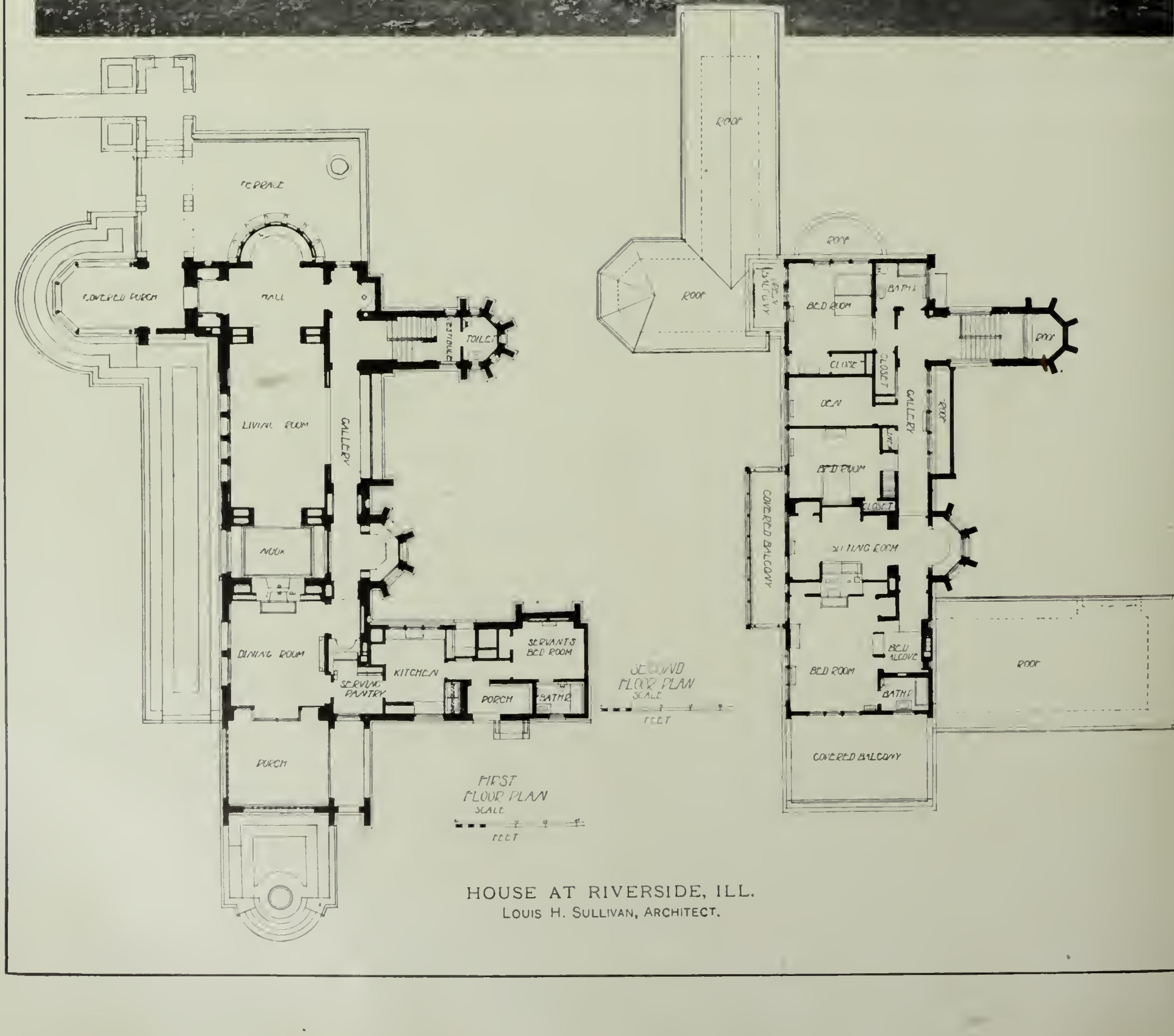
I. Commercial Buildings.

BY WILLIAM C. HAYS.

THE kernel of it all here in San Francisco is that the optimist made good. It was on the second day of the great fire: those not busy in moving household or office effects to safe places were gathered in groups, watching. We stood on Nob Hill during the destruction of the Hopkins' Institute of Art, and the gutting of the nearly completed Fairmont Hotel. Below, the south slope, out Sutter and Bush streets, was a seething hell; south and eastward was ruin. Even then, in the hour of destruction, he was there, the "Coast" type, the practical optimist. Shaking both fists at the flames, he declaimed: "I tell you, San Francisco will rise from these ruins like a Phœnix" — and the man next him, a scoffer, echoed, "Nix!"

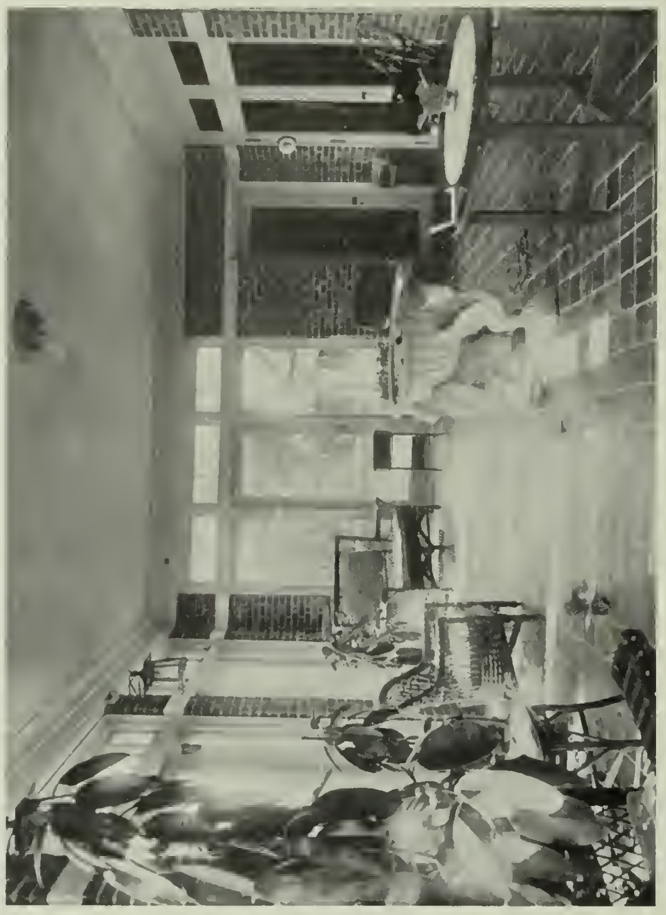
But in two days, the mayor, a practical — if impetuous — optimist sent telegrams to city executives everywhere: "Send us architects; not food nor clothes — architects." Then another loyal son and seer paraphrased Kipling and published: —

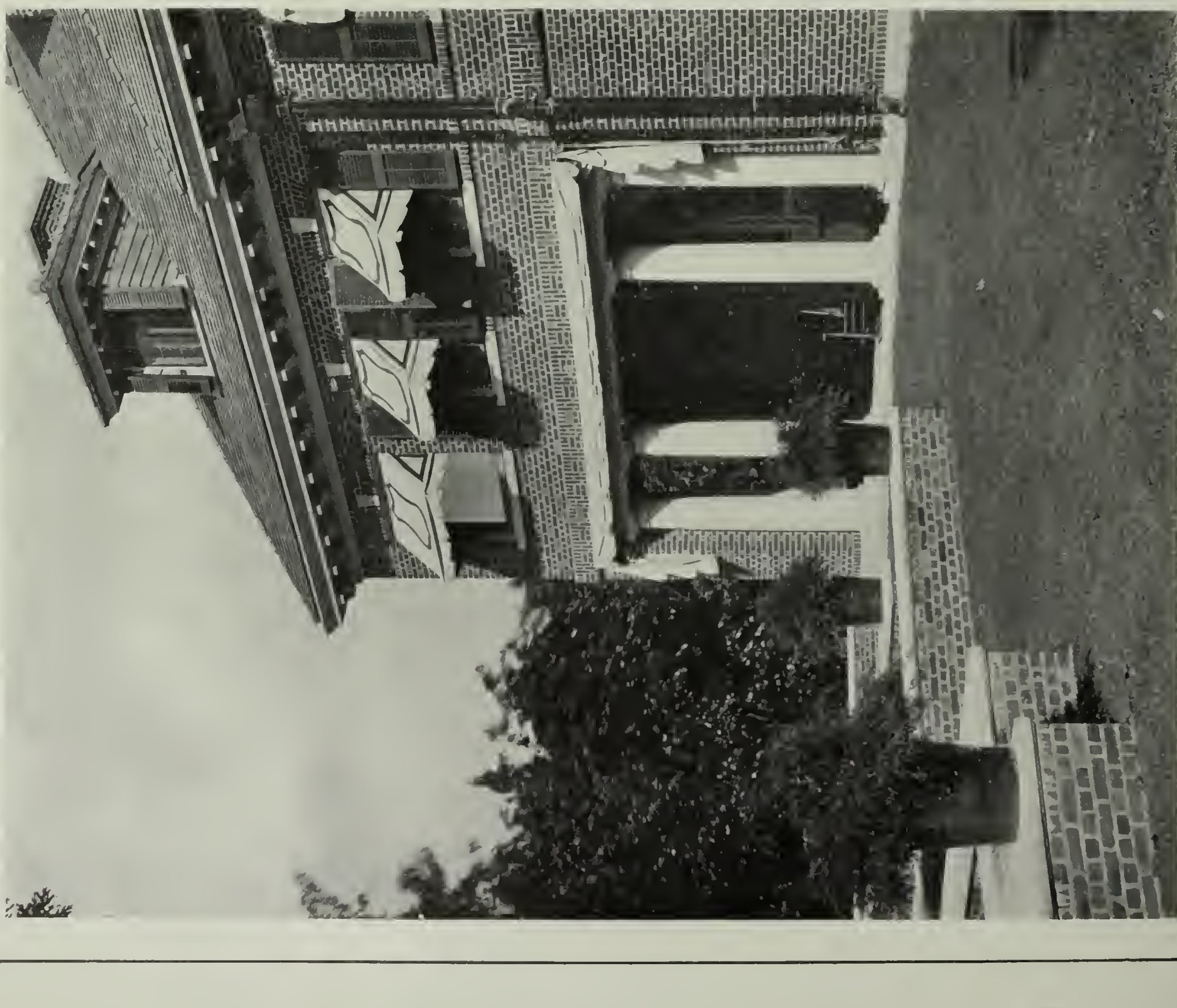
HOUSE AT RIVERSIDE, ILL.
Louis H. Sullivan, Architect.



HOUSE AT RIVERSIDE, ILL.
LOUIS H. SULLIVAN, ARCHITECT.

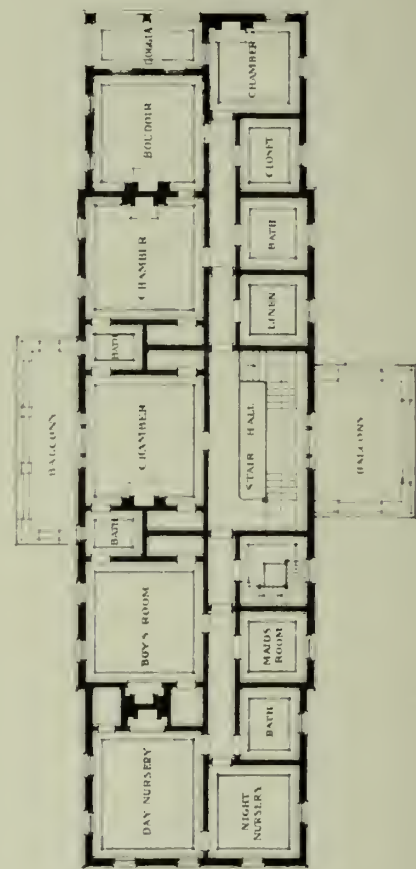
HOUSE AT RIVERSIDE, ILL.
LOUIS H. SULLIVAN, ARCHITECT.



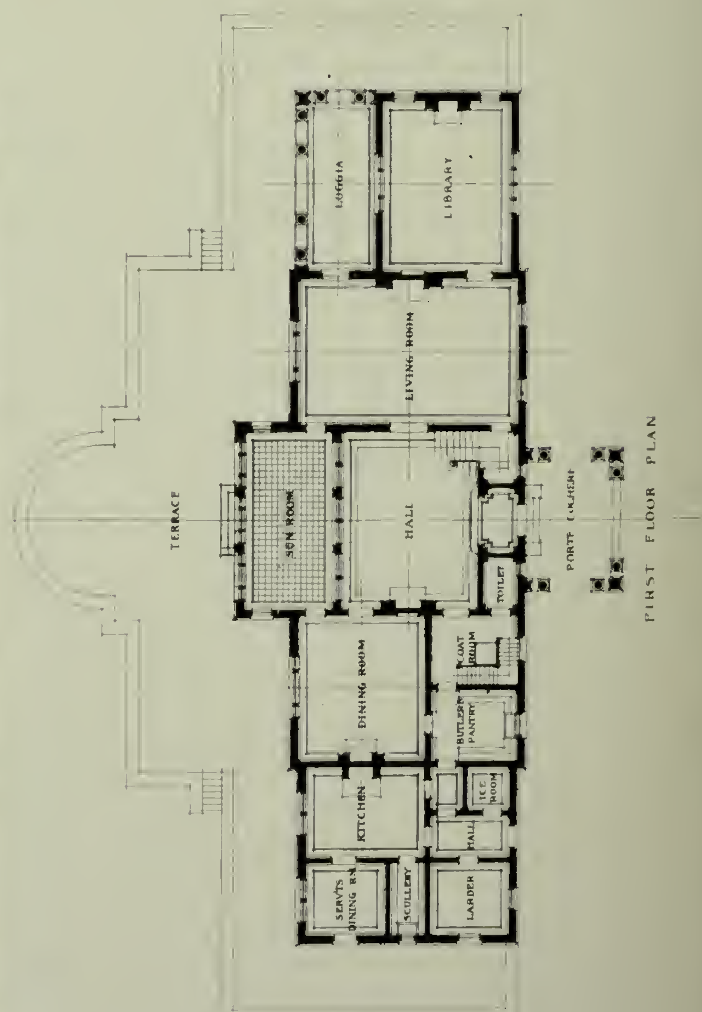


DETAILS. HOUSE AT DEDHAM, MASS.
JAMES PURDON, ARCHITECT.

INTERIOR VIEWS AND PLANS.
HOUSE AT DEDHAM. MASS.
JAMES PURDON, ARCHITECT.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

INTERIOR VIEWS, HOUSE AT DEDHAM, MASS.
JAMES PURDON, ARCHITECT.

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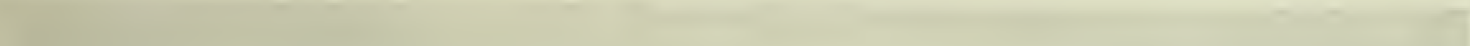
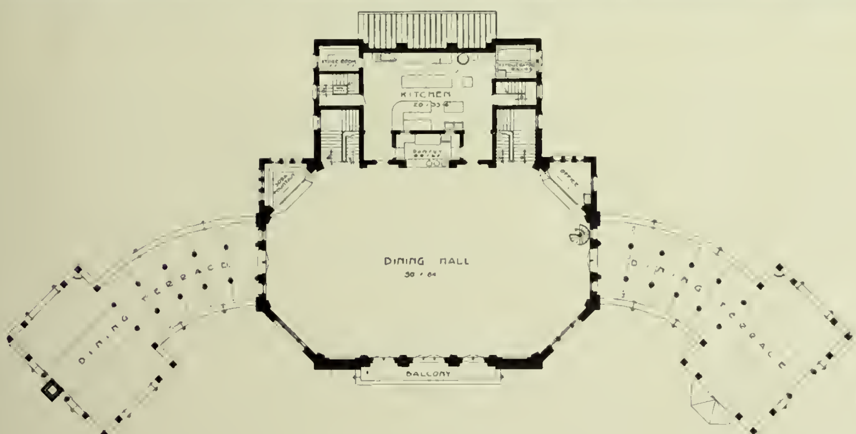


LINCOLN PARK REFECTORY, CHICAGO, ILL.
PERKINS & HAMILTON, ARCHITECTS.

LINCOLN PARK REFECTORY, CHICAGO, ILL.
PERKINS & HAMILTON, ARCHITECTS.

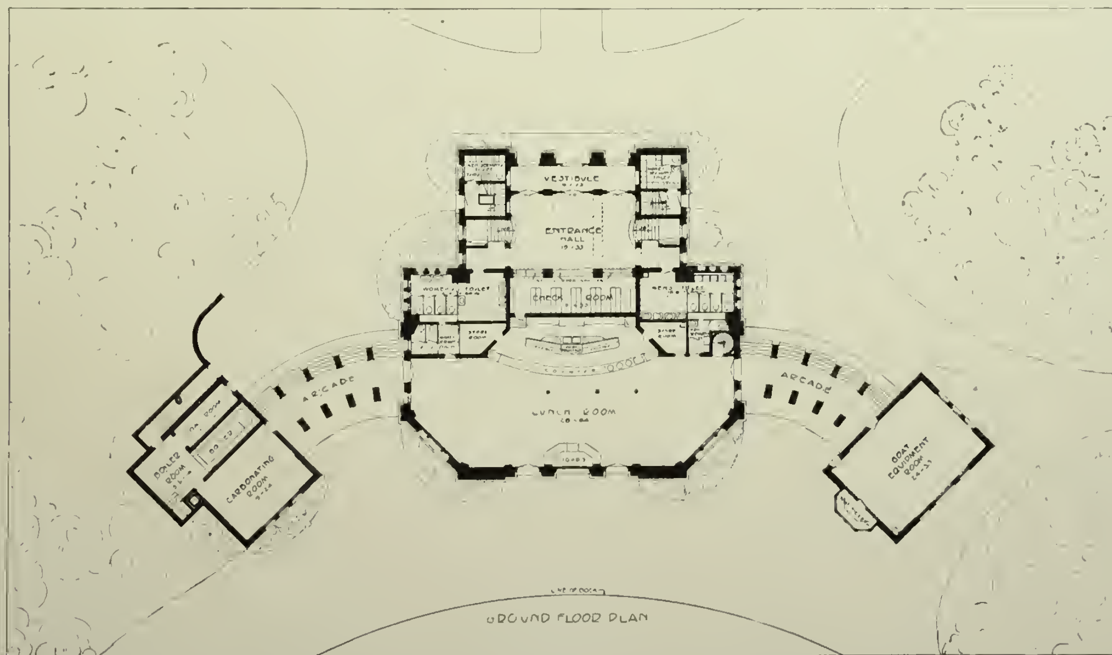


MAIN FLOOR PLAN

LINCOLN PARK

REFECTORY,

CHICAGO, ILL.



PERKINS

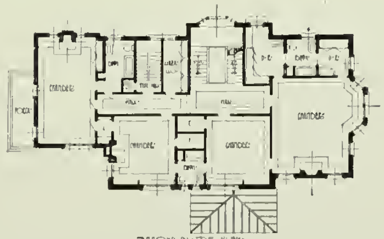
&

HAMILTON,

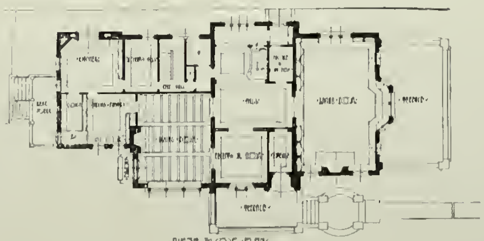
ARCHITECTS.

HOUSE AT CHICAGO, ILL.
H. R. WILSON & CO., ARCHITECTS.

THIRD FLOOR PLAN



SECOND FLOOR PLAN

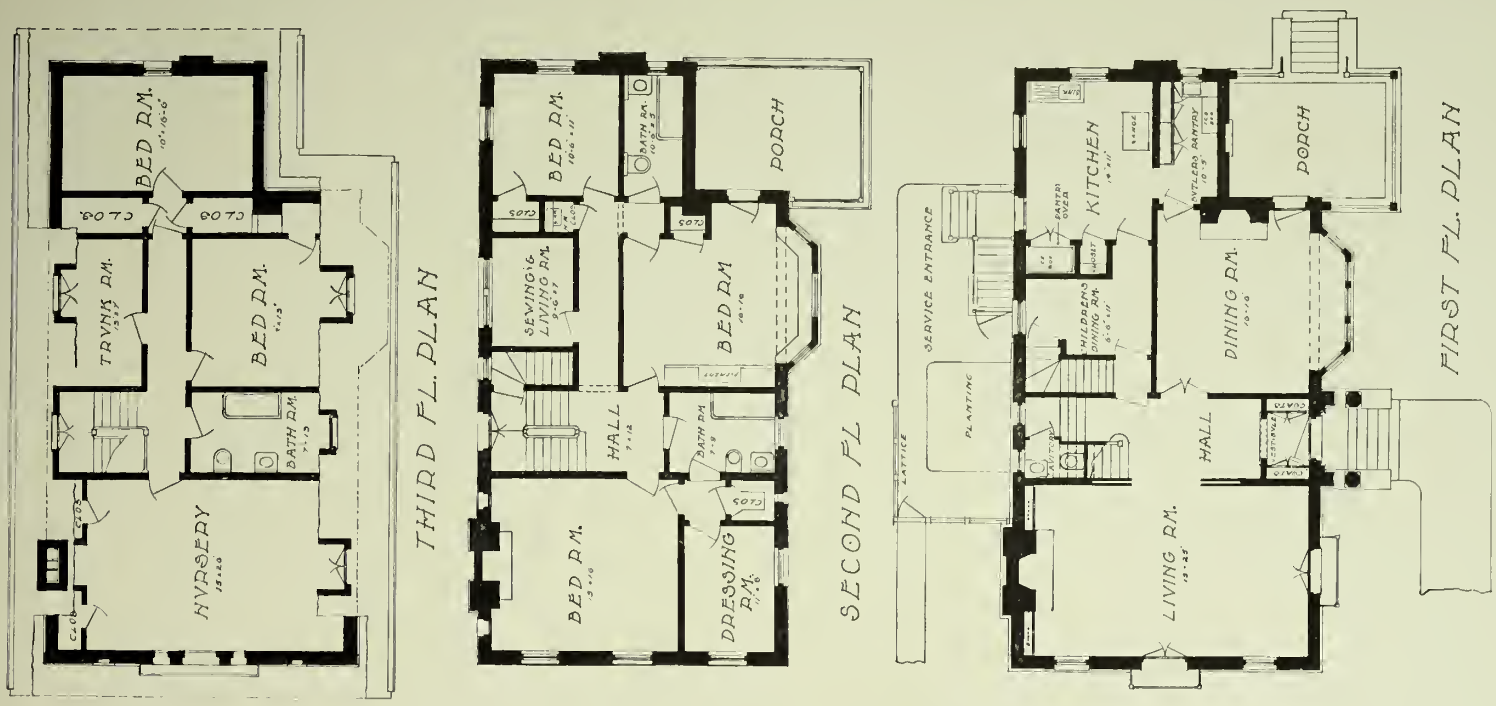


FIRST FLOOR PLAN

HOUSE AT CHICAGO, ILL.

H. R. WILSON & CO., ARCHITECTS.

HOUSE AT ST. LOUIS, MO.
EDWARD G. GARDEN, ARCHITECT.



HOUSE AT ST. LOUIS, MO.
EDWARD G. GARDEN, ARCHITECT.

THE DAMNDEST FINEST RUINS.*

Put me somewhere west of East Street where there's nothin' left but dust,
Where the lads are all a-bustlin' and where everything's gone bust,
Where the buildin's that are standin' sort of blink and blindly stare
At the damndest finest ruins ever gazed on anywhere.

Bully ruins — bricks and wall — through the night I've heard you call,
Sort of sorry for each other 'cause you had to burn and fall,
From the Ferries to Van Ness you're a God-forsaken mess,
But the damndest finest ruins — nothin' more or nothin' less.

The strangers who come rubberin' and a-huntin' souvenirs,
The fools they try to tell us it will take a million years
Before we can get started, so why don't we come to live
And build our homes and factories upon land they've got to give.

"Got to give!" Why, on my soul, I would rather bore a hole
And live right in the ashes than even move to Oakland's mole,
If they'd all give me my pick of their buildin's proud and slick
In the damndest finest ruins still I'd rather be a brick!

* Copyright, 1906, Lawrence W. Harris.

Yes! it was the practical optimist who wrought the miracle of reconstruction: he started the wave of enthusiasm; he compiled figures to show that the earthquake wasn't really so destructive, and that fires have occurred elsewhere. Scarcely waiting to collect his insurance, the

DETAIL OF UPPER STORIES, THE NEWHALL BUILDING.
Lewis P. Hobart, Architect.

optimist backed up his confidence. He rented temporary quarters and wired orders everywhere for big stocks of new — and the best — goods. Then he sought outside capitalists who believed in the stability of San Francisco's business to outweigh the instability of soil in an earthquake zone. So again the city arose, almost, it seems in looking backward, over night, which four years ago lay leveled. To-day it has more and better stores, banks, office buildings and great hotels than ever in its history.

DETAIL FROM NEWHALL BUILDING.

Merely to take a cursory look over the reconstruction means traversing miles of streets, and then some of the best among the smaller buildings are apt to be missed, since there are many good things tucked away in hidden corners. Over an area of several square miles the change is complete but for topography and here and there a familiar feature that has been restored.

Architecturally and structurally, it is true, the average new building is far better than the average old one which it replaces. But nevertheless one feels in the new streets an intangible loss; it is the colorful quality of the old town that, inevitably though unfortunately, is no more. Happily in the midst of their *nouveaux* neighbors still stand Page Brown's fine Crocker Building, the low Montgomery Block and its surrounding buildings, the old Parrott Building — of granite brought ready-hewn from China way back in the early days — the Mills Building and the Mint; all these unchanged, dignified, aloof. Many other "before-the-fire" buildings are restored too. but they are mostly of more recent date than these.

DETAIL OF UPPER STORIES, THE ALASKA COMMERCIAL BUILDING.
Meyers & Ward, Architects.

At costs varying greatly these landmarks have been saved of the city that was, although much stone facing was badly spalled by the heat and some terra cotta was shaken and sheared. I am told, by the way, that a total outlay of only $2,000 restored all terra cotta on the Crocker, Union Trust, and Hale Brothers Department Store buildings, though these are all tall structures and were exposed to the severest of earthquake and fire, in the great test.

It is worth while to note the immensely important part played by bricks, terra cotta and tiles in the construction of the entirely new buildings, as well as in restoration of the old. As to internal structure, the local manufacturers of clay products do not push the making of floor and partition blocks, the plants generally being run to their full capacity in making exterior terra cotta, so that this great field has in most cases been left uncontested to other structural materials. However, the partitions and floors in some of the principal new hotels, stores and office buildings are of hollow blocks — always, of course, tied carefully with clips, for security against vibration.

DETAIL FROM NEWHALL BUILDING.

The former business section was a city of cast-iron frontage: the new shows block after block of brick and terra cotta, contrasted here and there with equally interesting and imposing structures of cut stone. In the shopping districts the lower stories are frankly show windows, and of such size as to remind one of the old Elizabethan rhyme anent a great house in Derbyshire:

> "Hardwick Hall
> More glass than wall,"

and to suggest the paraphrase:

> "Windows tall
> All glass, no wall."

Among these brick, terra cotta and tile buildings there is a broad variety in composition: some are clever counterfeits of cut stone, as to form, finish and color; a few are orgies of exaggeration in the plastic quality of clay; many are sane

METROPOLITAN LIFE INSURANCE BUILDING.
N. Le Brun & Sons, Architects.

and appropriate; a few are beautiful. They vary in color from the simple match of terra cotta and brick, ranging through grays, buffs and reds, to the sprightliness of old decorated majolica. There are examples of standard surface, matt glass and lustrous enamel. Some of the ornament has been modeled charmingly by the hands of artists, though much of it is crude and ill studied — in mitigation of which it may be argued that the earliest buildings were rushed through by owners who would not allow their sometimes well-meaning architects time for proper study — which undoubtedly was true.

THE "WHITE HOUSE."
Albert Pissis, Architect.

Probably the first important work chronologically in the business district was the Sherman Clay building, eight stories high, of steel frame — of course for earthquake resistance, as are all the best new things — and of cream-colored matt glaze terra cotta exterior. This building was a pioneer in the complete elimination of apparent means of support through the lower story, the columns all being back behind the continuous area of plate glass. It is entirely occupied by a piano and music house, and the owners have been followed by their three strongest competitors, who likewise have all provided themselves with handsome quarters and shown their preferences for matt glazed terra cotta façades.

The department stores moved back into the down-town district almost simultaneously, nearly all occupying imposing new structures, second to but few in the country — almost all of them being, like the piano dealers', lustrous

THE GUNST BUILDING.
Lansburg & Joseph, Architects.

THE ROYAL INSURANCE BUILDING.
Howells & Stokes, Architects.

THE BALDWIN JEWELRY CO. BUILDING.
Bliss & Faville, Architects.

THE SECURITY BUILDING.
Howard & Galloway, Architects.

THE ALASKA COMMERCIAL BUILDING.
Meyers & Ward, Architects.

THE NEWHALL BUILDING.
Lewis P. Hobart, Architect.

THE SHERMAN CLAY BUILDING.
L. B. Dutton, Architect.

THE BALBOA BUILDING.
Bliss & Faville, Architects.

enamel or matt glaze terra cotta. In the "White House" designed by Albert Pissis there has been used structural as well as ornamental terra cotta throughout, and it is a plant of the highest class.

When W. & J. Sloane announced plans for an eight story building to cover a big lot on Sutter street, they too started a series of matt and enamel terra cotta or brick buildings, for most of the other furniture and carpet houses promptly followed suit and put their inflammable stocks within terra cotta and brick walls.

It is not surprising, then, to find solid blocks of terra cotta buildings, for the instances mentioned are not exceptional, but typical of the retail shopping streets. In connection with several of them color has been introduced with varying degrees of success.

The Royal Insurance Company commissioned Howells & Stokes to do a tall building for them and, bless them, sent the only Sayre & Fisher bricks out here to remind us quondam easteners of home. This building, however, has already been published, and so is not given the space here which its importance would warrant. It is not a little reminiscent of the Company's New York building on William street. In that immediate neighborhood, too, is another echo of lower New York in Meyers & Ward's building for the rich and influential Alaska Commercial Company. The plentiful use of ornament forms symbolic of the Company's connection with the Alaskan and Behring waters is a commendable departure: one is accustomed to the cables, shells and tridents, but the walrus heads are equally suitable and a relief from the omnipresent lion head of convention. Howard & Galloway meanwhile were doing the pressed brick and terra cotta Security, Adam Grant and Levi Strauss buildings. Later, by perhaps two years, Lewis Hobart began near this group his Newhall Building, of which more is to be said.

In the center of things Bliss & Faville were doing that straightforward solution of the office building, the Balboa.

It may be surprising to learn that in almost every instance these new buildings are higher and bigger than ever! We had all learned that the tall buildings having an elastic, articulated skeleton anchored to deep heavy foundations is the safest and most sane type with which to meet the earthquake hazard. But if these others were big undertakings, they were outdone in size by the Phelan Building designed by Wm. Curlett & Son; its walls are of cream colored glazed terra cotta above the cast-iron and glass of the two lower stories. This building fills the largest of the many "gore" lots — like New York's "Flatiron" — resulting from the acute intersections of Market street.

Taking these buildings as a general class — and the criticism may be applied equally to the stores and office buildings — the material is candidly burnt clay and unimpeachable, but there has been a too common failing to appreciate and apply the possibilities in form, of terra cotta as a plastic material. The plain classic pilaster, in its purest cut stone types, appears again and again; while broad surface-ornament forms, so inviting to the modeler and so suited to the mould, one regrets to find so seldom. In Mr. Lansburgh's building for Elkan Gunst the reverse is true; the forms are less stone-like but — there is a "but" — the material is so perfect an imitation of granite that the Northwestern Terra Cotta Company might almost be suspected of ownership in a quarry.

The Metropolitan Life Building! It has already been published, otherwise it should be given much space. Michel Le Brun knew the splendid site, for he had come out from New York just to "size things up" there on Nob Hill; and few buildings are so perfectly suited to their places. It is a stately mass on a commanding little hill, placed above a terrace wall and with a bit of grass about it; in gleaming light glazed terra cotta, with frieze of deep blue and golden brown, it is a fitting and impressive home for the Pacific Coast branch of a colossal insurance institution.

One turns with pleasure to take fuller notice of the Newhall Building, now nearing completion from Mr. Hobart's plans. This strikes us as being very nearly "it" as an architectural interpretation of the moderately tall, steel framed building. The two lower stories form a base of cut stone; the shaft is red brick of fine color and wall texture, with narrow piers and broad grouped windows, of which the spandrels and the outlined jambs are cream-colored matt glaze terra cotta. The reveals are ornamented and deep, to make the already dominant verticals the more insistent — and the composition has a crowning motive that is altogether satisfying.

This building carries some exceptionally well modeled ornament. Unfortunately some of the best pieces of it — the "bambini" panels — are placed so high in the composition that their charm does not count as might be wished. Perhaps one must go back to Cope & Stewardson's "Harrison Building" in Philadelphia if he would find a parallel to the Della-Robbia-like sentiment of this work. It is plain that more than a passing interest was here; that between architect and sculptor there existed a perfect *rapport*; that behind these two there has been responsive, intelligent co-operation on the part of a maker anxious to produce something of real distinction. Such was the case here, indeed. But the surprising fact is that in this concert of architect, sculptor and practical terra cotta maker, the sculptor is the same man who seventeen years ago modeled the lovely little figures of that earlier masterpiece — on the other side of the continent; and it was the same man, here representing a local terra cotta manufacturer, whose painstaking care then furthered the work of that sculptor and John Stewardson at the Perth-Amboy works.

One cannot think of these men without acknowledgment of their contribution to the community: the introduction of successful coast-made polychrome terra cotta, on an adequate commercial basis. Their valuable experience in a special field shortened the experimental period and put at the hand of the architectural designer a material peculiarly adapted to local conditions.

To California the love of color is a natural heritage, bequeathed by Spanish and Mexican, Japanese, Chinese and Hawaiian influences. The Iberian tradition up the coast in California is of gleaming white and glaring primaries. From the Orient and the Islands came over seas such tints and tone gradings as white man never comprehended before Whistler. The land itself, too, is colorful, while the sunshine, cool shadow and clear skies, seem to cry for color everywhere. The use of color, then, is destined to become more pronounced and general. Already a beginning has been made, and doubtless succeeding essays in this field will be increasingly successful.

Editorial Comment and Miscellany.

PLATE ILLUSTRATIONS — DESCRIPTION.

House at Dedham, Mass. Plates 132, 133, 134, 135. The exterior of this house is treated in brick with marble trimmings. The building has a commanding view of the lake on one side with a formal sunken garden on the other. Upon the interior the entrance hall and main stairway are finished in Caen stone. The balustrade is of ornamental bronze. The living room is treated in Circassian walnut, the library in old fumed oak, and the dining room in San Domingo mahogany. The service end of the house is made sanitary with walls of hard cement highly polished and the corners rounded. The third floor provides for guest rooms and servant quarters. The entire house is fireproof with walls of brick, partitions of terra cotta, and floors of terra cotta and tiling. The roof is of moss green dull glaze tile in shingle effect. Cost of the building was approximately twenty per cent more than a similar house would cost if built of wood.

Lincoln Park Refectory, Chicago. Plates 136, 137, 138. This building is designed primarily as a park restaurant and boathouse. The exterior is of a variegated deep rose colored brick with wire cut face, laid with deep sunk horizontal joints. The outside trimmings are of terra cotta and stone, while the roof is of green glazed tile. Upon the interior all walls are of a mottled buff shade of pressed brick. The main dining hall which is used as an assembly hall in the winter is treated with decorative panels of faience and trimmings of matt glazed green terra cotta.

A VERY OLD BRICK BARN AT NAYATT, R. I.

LUNETTE.
Executed in architectural faience by the Rookwood Pottery Company.
Brinton B. Davis, Architect.

TOWER OF PISA.

THE Royal Commission which was appointed some months ago to examine the foundation and the stability of the Tower of Pisa has handed in its report to the government, but only part of it has been made public. The commissioners found that instead of there being a massive and spacious base there is only a ring of masonry exactly corresponding in girth to the tower itself. Another astounding fact is that the foundations are merely three meters beneath the surface. The commission claims that the above facts constitute an incontrovertible proof that the tower was originally built perpendicularly, and that its leaning propensities which are becoming more and more accentuated are due to other causes than the intention of its constructors. They discovered that the base of the tower has always been immersed in water, and that a deep cistern to drain off the water, dug in 1840, has made matters worse owing to the general character of the subsoil which extends to the bed of the Arno, but more especially to seismic movements. The commissioners suggest that the government give immediate attention to the condition of the tower with a view to prevent its further leaning, and also to repair the interior. Signori Cuppari, a well-known engineer, says: "The first thing to do is to prevent the possibility of all oscillation, brace the tower up from the southern side, support the southern wall by a temporary foundation, and then repair the foundation by driving piles on which a new and substantial foundation can be built." It is now seven weeks since the report of the commission has been submitted and so far the government has taken no action. This apparent dilatoriness of the government is causing considerable perturbation throughout Italy as well as other countries.

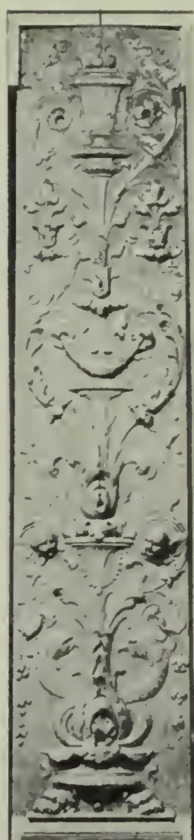
APARTMENT HOUSE, PARK AVE., NEW YORK.
Built of buff Devonshire brick made by the Kittanning Brick & Fire Clay Company.
Pfotenhauer-Nesbit Company, New York Representatives.
Headman & Schoen, Architects.

TERRA COTTA MANUFACTURER KNIGHTED.

MR. KARL MATHIASEN, President of the New Jersey Terra Cotta Company, New York, has been created a Knight of "Danebrog" by the King of Denmark.

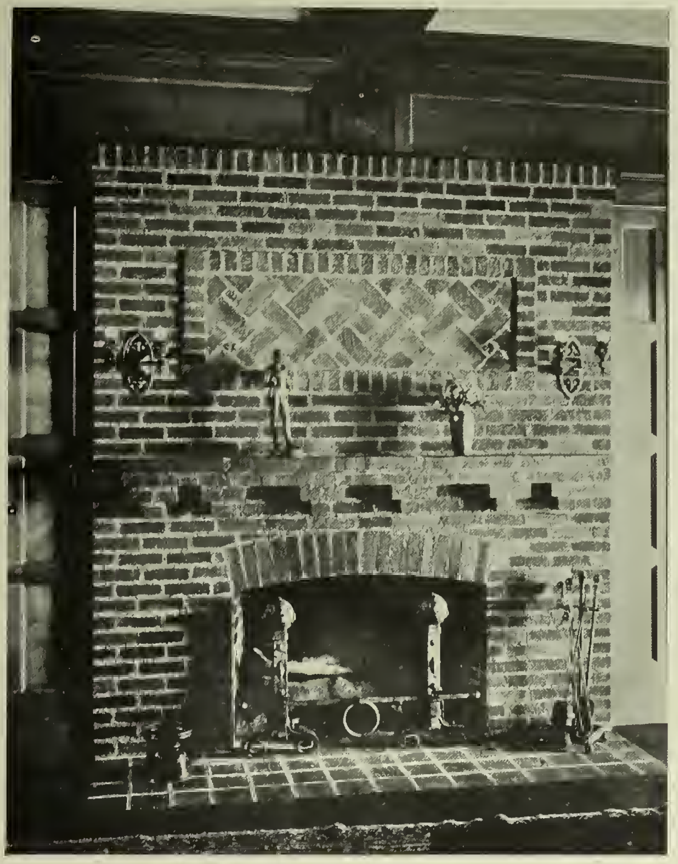
Mr. Mathiasen was born in Denmark fifty years ago, but has been a resident of this country for about thirty-six years. He is a director in the Danish-American Association, a society whose object is to further a closer relationship between the Danes in the United States and between the United States and Denmark. The aim of the society is purely cultural and it is for the interest which Mr. Mathiasen has taken in this Danish-American movement, and the assistance extended by him to his

DETAIL BY ATLANTIC TERRA COTTA COMPANY.
Howells & Stokes, Architects.

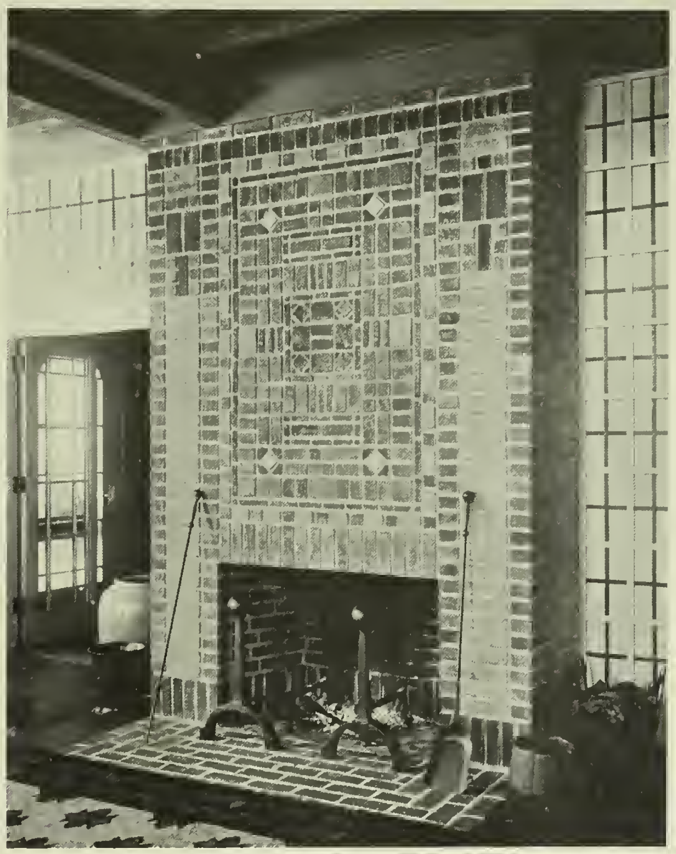


DETAIL BY SOUTH AMBOY TERRA COTTA COMPANY.
Pollard & Steinam, Architects.

DETAIL BY AMERICAN TERRA COTTA & CERAMIC COMPANY.
Purcell, Feick & Elmslie, Architects.



FIREPLACE IN A LIVING ROOM.
H. E. Davidson, Architect.



FIREPLACE IN A SUN PARLOR.
Andrews, Jaques & Rantoul, Architects.

country-fellows, that his services have been recognized by the King of his native land.

IN GENERAL.

At the annual meeting of the Washington Architectural Club, October 4th, the following officers were elected for the year 1910–1911: President, C. L. Harding; vice-president, D. J. Lix; secretary, A. L. Blakeslee; treasurer, S. M. Hitt; governor, W. W. Youngs; auditors, W. B. Olmsted and G. F. Dietel.

DOUGLAS PARK REFECTORY, CHICAGO, ILL.
Roofed with Ludowici-Celadon tile.
W. C. Zimmerman, Architect.

We commend the course of action taken by the newly selected committee of architects, Messrs. Carrère, Kendall, and Brunner, who were appointed to conserve and increase the architectural harmony and beauty of Fifth Avenue, New York City. They propose to influence property owners, not by means of ordinances and other compulsory measures, but by suggestion and argument. The committee is well organized and each member is determined to relieve the chaotic and unimpressive effect of the architecture in general, and make the various

DETAIL BY CONKLING-ARMSTRONG TERRA COTTA COMPANY.
Pell & Corbett, Architects.

thoroughfares beautiful through a harmonious design preserved throughout.

Plans have been submitted to the superintendent of buildings at Seattle for the erection of the largest and costliest office building on the Pacific coast. The plans call for a fireproof building, forty-two stories high, and are the work of Gaggin & Gaggin, architects.

Work will soon begin on the large office building for the Underwriters at Chicago. The architects, D. H. Burnham & Co., say that the building will be completed within a year. The cost of the building together with the site will approximate $6,300,000.

Seattle is about to construct an art museum that promises to be the finest building of this nature on the Pacific coast. The building is planned with the purpose of exhibiting large collections of art loaned by the various countries. In addition to the galleries there will be a large auditorium. The whole structure is to be erected at a cost of $500,000.

PEOPLES STATE BANK, CROWN POINT, IND.
Built of full glaze cream terra cotta made by the Northwestern Terra Cotta Company.
Beers & Beers, Architects.

DETAIL BY NEW JERSEY TERRA COTTA COMPANY.
Warren & Wetmore, Architects.

DETAIL BY NEW YORK ARCHITECTURAL TERRA COTTA COMPANY.
E. F. Guilbert, Architect.

The Cleveland Chapter of the American Institute of Architects and the Cleveland Architectural Club will hold their annual exhibition during the latter part of November.

The annual meeting of the Philadelphia Chapter, A. I. A., has just been held and resulted in the re-election of most of the officers of the past year — those elected being: Wm. D. Hewitt, president; John Hall Rankin, first vice-president; Horace Wells Sellers, secretary; John P. B. Sinkler, librarian; Charles L. Borie, Jr., treasurer. Executive Committee: D. Knickerbacker Boyd, Arnold H. Moses, Paul P. Cret.

DETAIL BY KETCHAM TERRA COTTA WORKS.
Ben R. Stevens, Architect.

Oswald C. Hering has formed a partnership with Douglass Fitch, and will continue the practice of architecture under the firm name of Oswald C. Hering and Douglass Fitch. Offices, 1 West 34th street, New York.

Gascoigne & Shattuck were the builders of the house at Dedham, Mass., James Purdon, architect, which is illustrated in this month's issue.

The Atlantic Terra Cotta Company will furnish gray terra cotta for the new Rector's Hotel, 44th street and Broadway, New York City, D. H. Burnham & Co., architects; white matt glazed terra cotta for the new theater, 43d street and Broadway, New York City, George Keister, architect; white terra cotta and blue and white Della Robbia Bambino panels for the new Day Nursery at Fall River, Mass., Matthew Sullivan, architect; white glazed terra cotta for the Locomotive Engineers' Building at Cleveland, Ohio, Knox & Elliott, architects.

The firm of Gredig & Lynn, architects, Knoxville, Tenn., has been dissolved. Albert E. Gredig succeeds to the business with offices in the Bank and Trust Building.

Fireproof Houses of Natco Hollow Tiles and How to Build Them is the title of a book just put out by the National Fireproofing Co., Pittsburg. To anyone interested in this type of construction this book will be in-

CAPITAL EXECUTED IN TERRA COTTA BY THE ATLANTIC TERRA COTTA COMPANY.
McKim, Mead & White, Architects.

valuable, for most if not all of what one will want to know is here told.

Recent excavations at Abbey Wood, England, on the site of Lesnes Abbey have revealed the ruins of a structure more than 250 feet long and 50 feet across the transepts. In the center of the cross stood a square tower and part of the supporting columns still remain. Plans

DETAIL BY E. WILSON, ARCHITECT.
Atlantic Terra Cotta Company, Makers.

of the excavations show the ruins of Lesnes Abbey to consist of an Abbey church, lady chapel, small chapels, a chapter house, cloisters, and indications of other buildings.

COMPETITION FOR A HOTEL IN AN AMERICAN CITY OF MODERATE SIZE.

FIRST PRIZE, $500. SECOND PRIZE, $250. THIRD PRIZE, $150.
FOURTH PRIZE, $1.00. HONORABLE MENTIONS.

COMPETITION CLOSES AT 5 P.M., MONDAY, JANUARY 16, 1911.

PROGRAM.

THE problem is a HOTEL OF MEDIUM SIZE, planned to meet the ordinary demands of a small American city. The site is assumed to be at the corner of two intersecting streets; the lot ample in size to accommodate the building and practically level.

The size and shape of the building arc left entirely to the designer, except that not less than one hundred and not more than one hundred and twenty-five sleeping rooms are to be provided above the second floor. At least one-half of the sleeping rooms are to have bathrooms and the others may be provided with toilet and shower accommodations.

The ground or first floor plan is to provide the usual accommodations which are necessary in a hotel of this size.

The second floor plan may be given over in whole or in part for family suites, reception rooms, small meeting rooms, etc., etc.

The upper floor plan should provide for a large social hall to be used for banquets, dances, and similar functions. In connection with this social hall, and on the same floor, there should be provided suitable reception rooms, coat rooms, smoke room, service rooms, toilet rooms, etc., etc.

A roof garden may or may not be incorporated in the design.

It is assumed that the basement plan provides the necessary space for mechanical equipment, storage rooms, kitchen, lavatories, barber shop, and perhaps a rathskeller, but the plan of this floor is not required.

The exterior of the building is to be designed entirely in architectural terra cotta, and it is suggested that at least portions of the walls be treated in color.

The chief object of this competition is to encourage the study of the use of architectural terra cotta. There is no limit set on the cost of the building, but the design must be suitable for the character of the building and for the material in which it is to be executed.

The following points will be considered in judging the designs:

A. The general excellence of the design and its adaptability to the prescribed material.
B. The intelligence shown in the constructive use of architectural terra cotta.
C. Excellence of plan.

DRAWINGS REQUIRED.

On one sheet, the principal elevation drawn at a scale of 8 feet to the inch. On the same sheet, the first and second floor plans, a typical bedroom plan, and the upper floor plan, drawn at a scale of 16 feet to the inch; also a small sketch plan of the roof garden if that feature is provided for. On this same sheet, if space permits, give sketch of an interesting interior.

On a second sheet, the elevation of secondary importance drawn at a scale of 16 feet to the inch, and a sufficient number of exterior details drawn at a scale of ½ inch to the foot to fill the sheet.

The details should indicate in a general way the jointing of the terra cotta and the sizes of the blocks. The color scheme is to be indicated either by a key or a series of notes printed on one of the sheets.

The size of each sheet (there are to be but two) shall be exactly 36 inches by 24 inches. Strong border lines are to be drawn on both sheets, 1 inch from edges, giving a space inside the border lines 34 inches by 22 inches. The sheets are to be of white paper and unmounted.

All drawings are to be in black ink, without wash or color, except that the walls on the plans and in the sections may be blacked-in or cross-hatched.

Graphic scales to be on all drawings.

Each set of drawings is to be signed by a *nom de plume*, or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat, or rolled (packaged so as to prevent creasing or crushing) at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., charges prepaid, on or before January 16, 1911.

Drawings submitted in this competition must be at owner's risk from the time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names, ten cents in stamps.

The designs will be judged by three or five well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

The manufacturers of architectural terra cotta are patrons of this competition.
The competition is open to everyone.

Program for The Brickbuilder Annual Terra Cotta Competition, page 264

THE BRICKBVILDER

AN ARCHITECTVRAL MONTHLY

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NOVEMBER
1910

NO. 11

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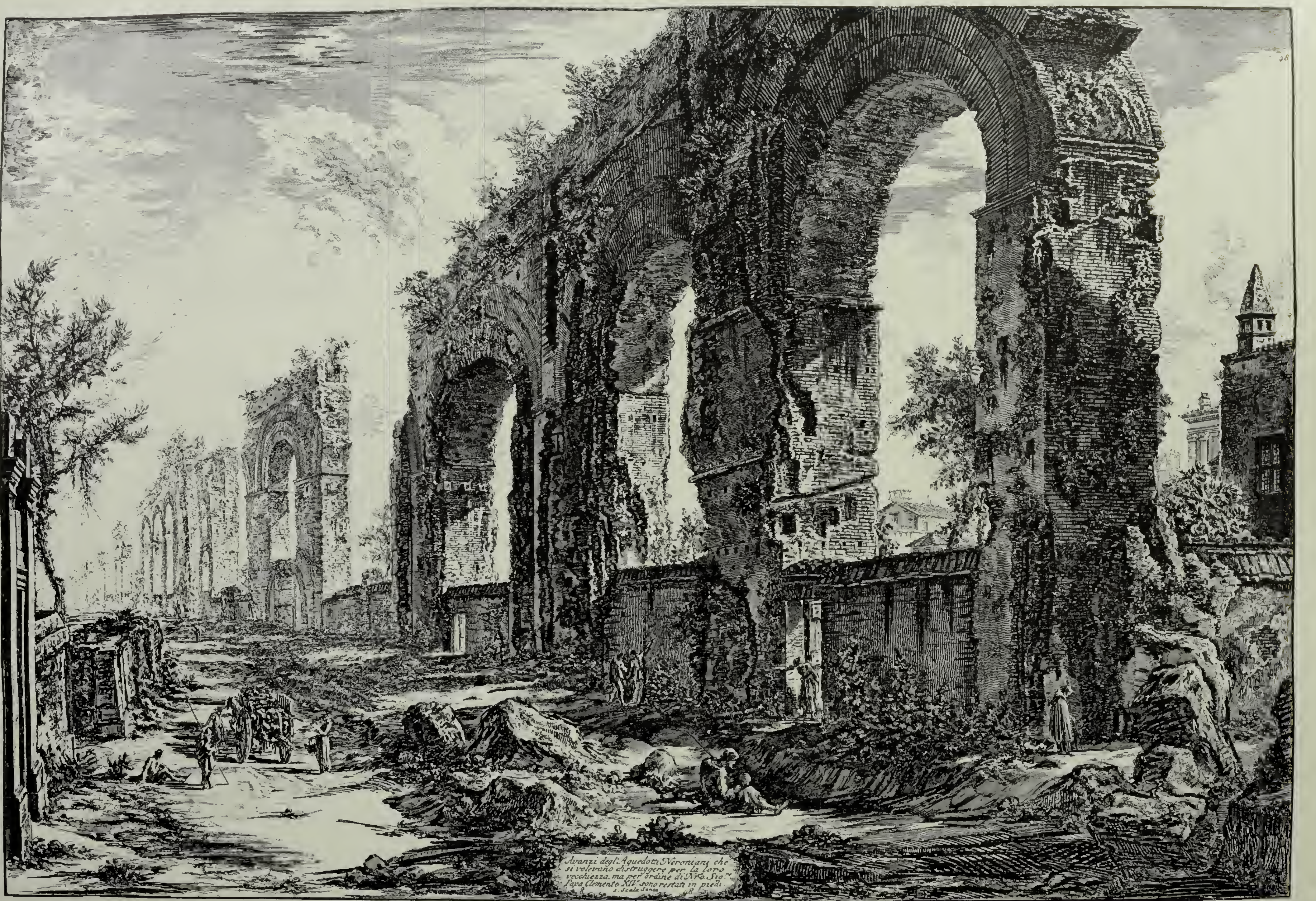
ALLEN & COLLENS AND LOUIS E. JALLADE; CRAM, GOODHUE & FERGUSON; JOHN WM. DONOHUE; CHARLES R. GRECO; MAGINNIS & WALSH; MATTHEW SULLIVAN.

LETTERPRESS



BRICK ARCADE, BUILT BY NERO, AS EXTENSION OF THE CLAUDIAN AQUEDUCT, VILLA WOLKONSKI, ROME.

GIOVANNI BATTISTA PIRANESI, DEL.

The ruins of the two stone aqueducts which brought water to Rome from the valley of the Anio near Subiaco, are a conspicuous feature in any view of the Roman Campagna. Begun by the Emperor Caligula, the aqueducts were finished to the walls of Rome by Claudius in 52 A.D. and continued within the city by his successor Nero, on a single arcade completely faced with brickwork, often, and with reason, called the most beautiful brickwork in the world. The arches shown in the engraving by Piranesi are located in the Villa Wolkonski. Immediately under the aqueduct near the Porta Maggiore, a tomb was discovered in 1865 bearing the name Tiberius Claudius Vitalis, probably the architect of the arcade.

THE BRICKBUILDER

VOL. XIX. NO. 11. NOVEMBER, 1910.

Hints on Architectural Acoustics.

BY HUGH TALLANT.

PART II. (CONCLUDED).

COMPUTATION AND PRACTICE.

FOR reasons outlined in the September number of THE BRICKBUILDER, the open hemicycle adopted by the ancients for the assemblage of their enormous audiences possesses the natural property of eliminating all reverberation. As a result the sound is of marvelous purity and distinctness, but lacking in quality and sometimes in loudness. The Greeks were sufficiently intelligent to analyze both these defects. The former they overcame by the introduction of resonant vases, as already described; the latter they obviated partly through the deflecting capacity of the masonry walls at the back of the stage, and partly by the use of a sounding board above such as may be seen in Fig. 35. In this way they arrived at a perfect development of all the acoustic essentials; loudness by proper deflecting surfaces; distinctness by the entire absence of reverberation; and timbre by the scientific distribution of resonant material.

Unfortunately this treatment so admirably adapted to the open-air theater is less applicable to ordinary modern conditions. In a closed auditorium complete elimination of reverberation is impossible. No material absorbs all the sound which strikes it, and some measure of back and forth deflection will unavoidably exist in spite of the most elaborate precautions. On the other hand the resonance developed by modern building materials is far inferior to that of the Grecian vases, and cannot be made to supply all the timbre necessary for musical purposes. A certain amount of reverberation with all its dangers and drawbacks is therefore required, at least in the case of a music-hall, to eke out the otherwise insufficient resonance, and both factors must be considered in making calculations for timbre.

There is however no accepted method of determining in advance the amount of resonance likely to be developed in architectural constructions. There is not even a tentative unit of measure — much less any means of evaluating resonance in terms of reverberation. The resonance developed in the air is one thing while that developed by solid materials is another, and it is at least open to discussion whether the psychological effect of all these phenomena is identical. Furthermore, while the calculation of reverberation has been solved to a first approximation for the pitch of middle C, the variation in absorbing capacity corresponding to changes in pitch is still something less than certain.* Other important factors are the purpose, size and possibly the shape of the auditorium in question. More reverberation is required for music than for speaking; more for certain kinds of music than for others, and more for a large auditorium than for a small one. Much patient research will be necessary before the relative influence of all these varying conditions can be foreseen. In the meantime the safest procedure is to arrange for the minimum of reverberation which will give satisfactory results. The following data selected from such material as the writer has been able to gather† may serve for general guidance in this connection. The calculations were all made in accordance with the formula $(A+X)\ T = 0.052\ V$ and were based upon the coefficients of absorption already given, except in one or two cases which will be specifically mentioned. For convenience the data will be arranged according to size of auditorium, beginning with the smallest.

The experiments for piano music conducted by Professor Sabine have already been mentioned. For five rooms of a volume varying from 2,600 cubic feet to 7,400 cubic feet the best results were obtained from an average reverberation of 1.08 seconds. In a room of 3,300 cubic feet recently tested by the writer a reverberation of about 1.00 second proved satisfactory for the piano, but

* See the extremely interesting article by Professor Sabine on "Variation in Reverberation with Variation in Pitch," published in the *Proceedings of the American Academy of Arts and Sciences*, June, 1906. The article concludes with the remark that "The whole hinges on the outcome of a physiological or psychological inquiry not yet in such shape as to lead to a final decision."

† The precise relation between resonance, reverberation and quality of tone can probably be ascertained only by careful comparison of the conditions existing in a great number of auditoriums — good, bad and indifferent. The writer would be very glad to receive any data bearing on this subject.

was somewhat excessive for both speaking and singing. For rooms of from 10,000 to 15,000 cubic feet a reverberation of a little over 1 second seems to give satisfactory results for all purposes. In such cases, however, the size of the audience is subject to such large proportional variation that neither calculations nor conditions can be relied upon with any degree of accuracy.

A somewhat more reliable test was furnished by the auditorium of the New York Music School Settlement. This room contains about 31,000 cubic feet. The wooden floor is uncarpeted, the walls and ceiling are of plaster, and there are no draperies with the exception of two light curtains. When this room is vacant except for the experimenter and his assistant, the reverberation (actual as well as calculated) is over 5 seconds and two persons side by side converse with difficulty. With an audience covering about half the floor space the reverberation is reduced to between 1.3 and 1.4 seconds with reasonably satisfactory results.

The lecture room of the Brooklyn Institute of Arts and Sciences contains about 54,000 cubic feet. As this room was intended exclusively for speaking purposes it was carefully designed for a reverberation of 1.00 second. Occasionally however it is used for musical recitals and at such times the quality of tone is altogether insufficient. When the room is practically vacant (as in the case of rehearsals) the reverberation is increased to about 1.25 seconds, and the quality of tone is much improved although still insufficient for musical purposes.

The Institute of Musical Art of the City of New York contains an auditorium known as the Recital Hall* which has a volume of 51,000 cubic feet, or about the same as the lecture hall of the Brooklyn Institute. The acoustics of this room were recently tested in the presence of the writer and some fifteen or twenty other visitors and were pronounced beyond criticism. The precise reverberation developed under these conditions is a little uncertain owing to the fact that the absorbing capacity of the cork flooring is not accurately known, but it probably was a little over 1.6 seconds.

The Brooklyn Academy of Music contains three large auditoriums. One of these known as the music hall is used about equally for lectures and for so-called "chamber music." As this hall was to be equipped with a large and powerful organ, the reverberation was kept down to a minimum by the application of brocade over flannel batting to all the available wall surfaces. Even with this precaution the organ must still be manipulated with care to prevent it from becoming oppressive. In other respects the results are what might have been expected. For lectures the acoustics are admirable; for large chorals with organ accompaniment they are still good; for lighter music such as string quartets, solo singing with piano accompaniment, etc., the quality of tone is insufficient. As one well-known artist expressed it, "The room is hard to sing in — it does not ring." The volume of this hall is 284,000 cubic feet. The calculated reverberation is 1.49 seconds (assuming an absorbing capacity of 0.30 for the carpeting) and there are about 8,000 square feet of woodwork.

The opera house of the Brooklyn Academy of Music was designed with extreme care on the megaphone principle. It has been utilized for every conceivable purpose — from a conference of the Associated Missionary Societies to a democratic mass-meeting; from a Chaminade recital to a Rachmananoff concerto. It has given perfect satisfaction for every purpose and has been particularly commended for the quality of tone which it develops. It has a volume of 432,000 cubic feet, a reverberation of 1.6 seconds and between 7,000 and 8,000 square feet of woodwork exclusive of the stage floor.

FIG. XXXV.

The Leipzig Gewandhaus which was used in preparing the calculations for the present Boston Music Hall has a volume of 407,000 cubic feet, a reverberation of 2.3 seconds and 2,500 square feet of woodwork.† The Boston Music Hall itself has a volume of 649,000 cubic feet, a reverberation of 2.31 seconds and 6,750 square feet of woodwork.† In comparing these two auditoriums with each other and with the Brooklyn Academy Opera House, it will be noted that the Opera House has a slightly greater volume than the Gewandhaus, a reverberation 0.7 of a second less, but fully three times as much woodwork. Thus the volumes are approximately the same and the diminution in reverberation is offset by an increase in resonant material. On the other hand the Music Hall which is fifty per cent bigger than either of the other two auditoriums has the same reverberation as the Gewandhaus and the same amount of resonant material as the Opera House. In other words as between the Music Hall and the Gewandhaus the reverber-

* The data concerning this successful auditorium was obtained through the courtesy of the architect, Mr. Donn Barber.

† This data is taken directly from pages 64 and 66 of Professor Sabine's treatise on "Architectural Acoustics."

ation is the same and the increase in size is offset by an increase in resonant material. As between the Music Hall and the Opera House the resonant material is the same, and the increase in size is offset by an increase in reverberation. The conditions in these three auditoriums are therefore perfectly consistent with one another, and it is reasonable to infer that an auditorium of the size of the Music Hall but with no more woodwork than the Gewandhaus would require a still further increase in reverberation, perhaps to 2.5 seconds or even more.

Evidently the examples above cited are too few and the varying conditions too numerous to establish any absolute mathematical law governing quality of tone. At the same time they seem to indicate a certain rough correspondence between size on the one hand and amount of reverberation and resonance on the other. For musical purposes the necessary reverberation apparently increases from 1.00 second for a volume of 2,500 cubic feet to about 1.35 seconds for 30,000 cubic feet, 1.60 seconds for 50,000 cubic feet, 2.30 seconds for 400,000 cubic feet and perhaps 2.50 seconds or a trifle more for 650,000 cubic feet. For speaking purposes a somewhat smaller reverberation would probably give better results in each case. When, however, a music hall contains a large amount of woodwork the reverberation may be cut down to a minimum of 1.6 seconds for a volume of 450,000 cubic feet or less, and to 2.3 seconds or a little less for a volume of 650,000 cubic feet. It may be added that for auditoriums of medium size a reverberation of 1.6 seconds is about the smallest that can be obtained without the application of special absorbing material to the walls, so that broadly speaking a minimum of reverberation combined with a maximum of resonant material will give satisfactory results for both music and drama.

FIG. XXXVI.

The determination of the proper amount of reverberation involves a number of secondary points which will be most conveniently illustrated by a practical example. We will suppose a music room 20 feet wide, 30 feet long, 15 feet high, with plaster walls and ceiling, wainscoting 3 feet high and two doors which with their trims cover 50 square feet of wall surface above the top of the wainscot. As contents we will assume 40 square feet of oil paintings, 120 square feet of heavy curtains, 35 cubic feet of plants, and a scattered audience numbering fifteen men and fifteen women including the musicians. The absorbing capacity will then tabulate as follows:

Material	Quantity	Coefficient	Absorbing Capacity
Ceiling and plaster walls .	1800 sq. ft.	0.034	61.20
Floor, wainscot and other woodwork	950 ,,	0.061	57.95
Paintings	40 ,,	0.280	11.20
Curtains	120 ,,	0.230	27.60
Plants	35 cu. ft.	0.033	1.155
Men	15 ,,	5.16	77.40
Women	15 ,,	5.18	87.15
A + X			323.655
V = 20 × 30 × 15 =			9000

Substituting the values of A + X and V in the formula we have:

$$323.655\ T = 0.052 \times 900 = 468$$
$$T = 1.44$$

The easiest way to reduce this excessive reverberation is to place oriental rugs on the floor. If A′ is the additional absorbing capacity which must be furnished by the rugs in order to reduce the value of T to 1.1 then by substitution in the original formula we have

$$(A' + 323.655)\ 1.1 = 468$$
$$A' = \frac{468-356}{1.1} = 101.8$$

The absorbing capacity of heavy rugs being 0.29 the amount required will be $\frac{101.8}{0.29}$ or about 350 square feet. As the area of the room is 600 square feet there will be ample floor space upon which to spread the calculated quantity of rugs, and no other absorbing material will be needed.

Certain points in connection with this calculation require comment. In the first place as the conditions assumed were absolutely normal it appears that a fairly large music room is likely to give satisfactory acoustic results. On the other hand a small room is apt to lack resonance particularly if carpeted. It will be noted that the description of the room contains no mention of windows. This is because the glass of the sash and the woodwork of the casing average relatively to their area almost exactly the same absorbing capacity as plastering, and are therefore included under that head in the tabulated form. There is also no mention of furniture, owing to the fact that a person together with the chair in which he or she is seated averages about the same absorbing capacity as the same person standing free. Obviously there may be some variation in any special case according as the exposed surfaces of the chair are of wood or upholstery. For that matter a woman doubtless absorbs less sound in an evening gown than in street costume. Professor Sabine mentions a case where "over three thousand observations had to be discarded because of failure to record the kind of clothes worn by the observer." In actual architectural practice, however, these delicate distinctions are more technical than important. The absence of three or four guests expected at a *musicale* will more than offset all such minor considerations.

What is of more importance is the probable variation in the size of the audience. Where the discrepancy is apt to be very great the auditorium should be calculated for the extreme conditions likely to occur, and the absorbing capacity so averaged as not to give excessive results in either case. The solution often becomes a matter of architectural ingenuity. The writer was recently consulted concerning an auditorium used for both rehearsals and concerts. In the former case there is no one present but the musicians; in the latter case the audience often crowds the capacity. The hall has an area of some 2,000 square feet and a height averaging only about 15 feet. The walls and ceiling are of plaster, and the hard wood floor cannot be carpeted because it is used for dancing. As might be expected the reverberation during rehearsals is such as to render satisfactory work impossible. On the other hand the floor area is so large in proportion to the volume that a full audience possesses sufficient absorbing capacity to reduce the reverberation to fairly satisfactory proportions. To remedy the difficulty during rehearsals and to render the conditions also satisfactory when only a small audience is present, it is proposed to separate the hall into two unequal divisions by a heavily interlined curtain. The front part where the musicians are stationed will contain about two-thirds of the total volume. Sufficient felting is to be applied to the walls of this portion to create satisfactory conditions when there is only a scattered audience present. The intention is to keep the audience in the front part of the hall whenever possible, regulating the amount of reverberation by drawing back the curtain more or less as may be required to allow additional reverberation to develop in the rear portion. It is hoped in this way to obtain fairly uniform results under all circumstances.

FIG. XXXVII.

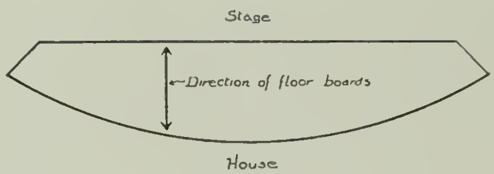


FIG. XXXVIII.

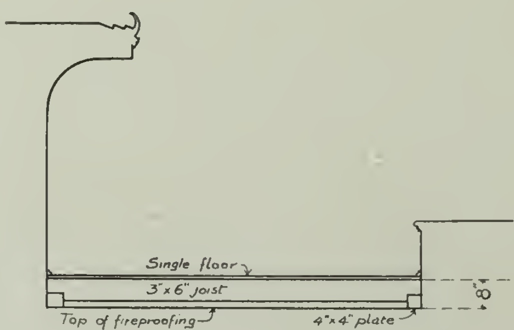


FIG. XXXIX.

In the case just described the absorbing capacity of the audience was of vital importance. Where, however, the floor is carpeted and the chairs are permanent the presence or absence of the audience makes comparatively little difference. The average space occupied by a single person is about 4½ square feet so that, as the absorbing capacity of the audience is 0.96, a single person absorbs 4.3 units. As compared with this the absorbing capacity of an upholstered chair is 3.3, which added to that of the carpeting beneath amounts to upwards of 4.2 units. The same amount of sound is therefore absorbed whether the seat is occupied or vacant, and the reverberation is unaffected by the size of the audience.

In cases where it is desirable to develop a large amount of resonance the manner in which the woodwork is constructed is of considerable moment. Anything tending to increase the elasticity will also increase the resonance. The furring strips behind a wainscot should be kept as far apart as possible, the panels made long and slender and the thickness of the material reduced to a minimum. In the New Amsterdam Theatre a conscientious attempt was made to construct a wainscot which would respond to tones of different pitch, somewhat on the principle of the ancient resonators. With this end in view the wainscot-cap instead of being carried parallel to the slope of the floor was arranged in a series of steppings, so that the panels corresponding to a given stepping were of varying lengths. The theory was that as the longest panel was less than twice as long as the shortest, all the panels of a given group ought to respond to tones within a single octave. In order to secure this effect it was necessary to cleat the panels only at top and bottom so that they might be free to vibrate throughout their entire height. The carpenters, however, could not be convinced that it made the slightest difference where a brad was driven, and the result was a continuous and bitter warfare between the superintendent and the workmen. The wainscoting was finally completed after the writer had made himself unpopular with every hard-working mechanic on the job, and the acoustics have given every satisfaction, but it would be difficult to prove that the resonance is more uniform than would have been the case with some other style of wainscot. Fig. 36 gives a general view of this construction and Fig. 37 the detail of the paneling.

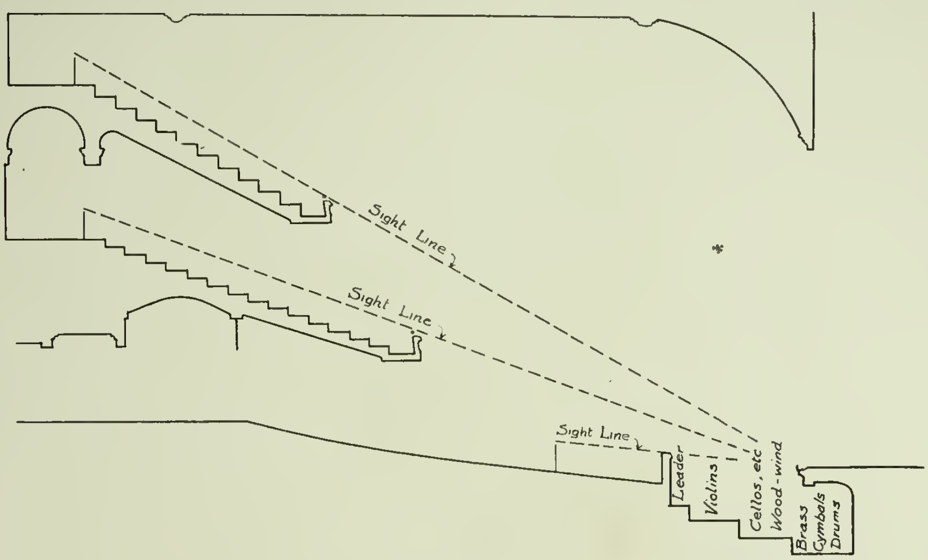


FIG. XL.

Similar experiments with the flooring of orchestra pits have given more tangible results. The ordinary pit is segmental in shape, and it is easy to vary the lengths of the floor boards by merely running them in a transverse direction as indicated in Fig. 38. The results in this case also are somewhat uncertain owing to the contact of the chairs, music stands, etc. It has however been clearly demonstrated that the resonance is greatest where there is a clear space of from 6 to 8 inches underneath the flooring. A single floor gives better results than a double one and, to allow free vibration, should be supported on 3 by 6 inch joist blocked up at each end on wooden plates so as not to touch the fireproofing below. A section of this construction is given in Fig. 39. In most music halls the general shape and location of the orchestra pit seems to be left either to chance or to the general exigencies of the situation. Where space is lacking the pit is sunk some 4 or 5 feet below the adjacent floor and carried back under the stage but otherwise the general practice is to set the floor of the pit only 2 feet below the adjacent floor or about 5 feet below the stage level. This last arrangement keeps the heads of the musicians just below the line of sight of the audience, but seems to have no other advantage. Certainly in the case of a heavy orchestra the accentuation of some instruments to the detriment of others renders the first few rows of seats highly undesirable to say the least. Far better results would be obtained by concealing the orchestra altogether, either by dropping it below the floor or by constructing the orchestra rail of solid materials, as shown in Fig. 40, so as to shield the front rows of seats against the direct sound. Such deflected sound as reached the front seats under these circumstances would have traveled far enough for the tones of the different instruments to become satisfactorily blended. Moreover the brasses and instruments of percussion, being placed under the stage, would be sufficiently muffled to prevent their interference with the singing. The arrangement of the orchestra pit at Bayreuth is of this general character.

One point which is usually neglected in the development of large auditoriums is the question of sound-proofing. As already explained the theoretic method of preventing the passage of sound is by interposing successive layers of materials having different absorbing capacities. Air spaces are well adapted for this purpose, but they should be either very narrow or upwards of a foot in width so as to avoid the resonance developed by space about 8 inches wide. In the case of the Brooklyn Academy of Music the foyer, which is sometimes used as a ballroom, is placed immediately back of the opera house, only a single wall intervening. Fig. 41 shows the construction employed for preventing the passage of the sound. There are two sets of doors, one sliding and one swinging, placed on either side of the wall which is furred to a total thickness of 3 feet, there being 2 feet in the clear between the two sets of doors. The doors on the side toward the ballroom are, in addition, covered with a heavy curtain which probably absorbs over a quarter of the sound. It had been thought that it would be necessary to fill the space between the two sets of doors with specially constructed mattresses but experience has shown that this is entirely unnecessary, and that this sound-proofing consisting merely of a curtain, two sets of doors and a single intervening air space furnishes ample protection.

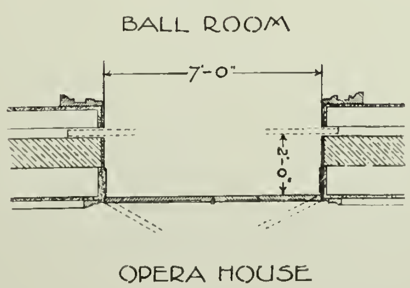


FIG. XLI.

Burnt Clay's Share in the Rebuilding of San Francisco.

II. Hotels, Apartments, Residences.

BY WILLIAM C. HAYS.

IN MY previous paper the subject treated of was the restoration of the business districts, and this because in the first period of reconstruction little was undertaken except business buildings, a few hotels, and the first of the new municipal work. The essential thing, then, was the resumption of business on a normal basis.

Nor would it have been wise to launch other undertakings, in view of market and labor conditions. For a short time the cost of operations mounted up high: labor in the building trades was scarce, unionism was safely entrenched, work was plentiful, money was everywhere, yet prices of commodities in the shops remained stable. His wages abnormally high, the workman — the plumber, lather, plasterer, and let us admit with regret, even the bricklayer — eased up in his work. He joined the erstwhile small property owner, now unexpectedly rich in insurance money, while improvident, side by side, they "blew themselves" and spent freely for frills and folderol; the feminine half of the "proletariat" was for the while silk lined and rustling; and the breadwinner's brew of "sharp steam" gave way to vintages. In the temporary quarters of the finest shops strange new people acquired luxuries, while oriental rugs, grand pianos, limited editions de luxe, Dresden and Limoge loaded delivery wagons which headed, not to Nob Hill, or the Western Addition, nor yet down the Peninsula — but "across the Slot" into the Mission and Happy Valley. The "masses" splurged, and the "classes" saved, until again the scales turned. But soon came the return to normal conditions, then a slump at the time of the financial panic of 1907, and afterward the real impetus came in the direction of other than mercantile building.

PALACE HOTEL.
Trowbridge & Livingston, Architects.
George W. Kelham, Associated.

The great hotels were already well under way; indeed, the Fairmont and St. Francis restorations, and the New Palace, were among the earliest projects of the reconstruction days. Of these three, the Palace is mainly of burnt clay materials inside and out. The Fairmont is a terra cotta exterior; the St. Francis has terra cotta partitions, but with a cut stone exterior.

The repairing of the Fairmont (originally designed by Reid Brothers) was no great matter of concern to the clay industry, excepting as it showed that the terra cotta walls were harmed very little. But the interior having been badly damaged, and in parts almost ruined, the work of Miss Julia Morgan, as architect in charge of the reconstruction, was mainly inside the building.

At the time of the fire Bliss & Faville were carrying out a large addition to the

THE PALM COURT, PALACE HOTEL.

St. Francis, of which the new steel frame, though unenclosed, came through almost without damage, having been protected by the original hotel itself on one side, and by Union Square, an open park, opposite. The replacing of some broken partition blocks and resetting of others that had been shaken loose — in addition to the terra cotta partitions and the common brickwork in the rear and light court walls of the unfinished addition — were all that had to be done by the brick and terra cotta men.

The Palace, however, was quite a different affair. Despite its wealth of romance and tradition, and notwithstanding the soundness of its old brick walls, the shell of the original building was doomed to come down. The antiquated arrangement of the place was no longer possible, in competition with such modern plants as the St. Francis and Fairmont. Its little interior light courts; its many inside rooms with little light and no ventilation at all; its vast high-ceilinged, bay-windowed outside apartments, all belonged to an irrevocable (and only sentimentally to be lamented) past.

DETAIL OF BALL ROOM, PALACE HOTEL.

Consequently Messrs. Trowbridge & Livingston were commissioned to design a new building. Retaining something of the spirit and the typical features of arrangement from the old familiar house, it must at the same time sum up the experience gained by them from such works as the St. Regis in New York. How well they have succeeded San Francisco has not yet fully realized. The old-timer cannot but look through a veil of prejudice at this brand new interloper where the Palace, the Old Palace, was. He sees the Palm Court, but it's a different court; he travels through the long corridor and the arcades, but they're different, too. He orders "another of the same, thank you," while he "reminisces" and repines. In well ventilated bedrooms he breathes fresh air while, through the night, he grieves for the old musty stuffiness. But we notice that he begins to take kindly to the new. And some of us, in colder judgment, are ready to admit that the New Palace is a triumph for Trowbridge & Livingston (and especially for Geo. W. Kelham, their associate and representative here). San Francisco, even the San Francisco that holds to and lives in the past, will come to realize more and more how sympathetic is this new interpretation of the dearest traditional monument in a real Californian's heart.

ST. DOMINIC APARTMENTS.
F. H. Meyer, Architect.

CHISMORE APARTMENTS.
F. H. Meyer, Architect.

Externally the new has little in common with the old Palace. Its walls, above the lower stone and iron story, are broad plain surfaces of light colored pressed brick,

DETAIL OF CHISMORE APARTMENTS.

laid up in broken English bond, with deep raked joints. Near to the top is a high band of paneled, moulded and ornamented terra cotta, with high iron brackets supporting an iron and terra cotta balcony which completely encircles the building. The top story, again, is brick with arched windows and terra cotta key blocks, surmounted by a fluted frieze, a cornice of slight projection, and the richly designed cheneau. At each corner of the building are double vertical lines of ornamented terra cotta quoins to mark the pavilion-like terminal composition of the façades.

Always the interior "court" has been the feature of the Palace. The new one is smaller, and lower, than

TYPICAL "FLATS."

was the old; there are no galleries rising high one above another, to the inconspicuous glass roof that seemingly used to leave everything open to the sky. The new roof is lower down, and much in evidence. If the new court is richer and more metropolitan it is perhaps something less individual — which one may regret. With the new lavishness of marbles, Caen stone, and rich materials of all sorts throughout the principal rooms one can no longer associate with the Palace background its picturesque figures of the old times; this is more of an up-to-date setting for the "hobble-skirted," the picture-hatted, the "incroyable" of to-day. But the feeling of richness is not confined to the court alone, for the lobby, ball-room, dining room, grill and bar-room are all handsome apartments.

It is perhaps a long cry from the subject of "Burnt Clay's Share in the Rebuilding of San Francisco" to the

DETAIL OF ENTRANCE, CHISMORE APARTMENTS.

mention of Maxfield Parrish. But one cannot write on the interior of the Palace and leave "The Pied Piper of Hamelin" unnoticed. Not the least of our debts to Trowbridge & Livingston is their provision for this splendid example of Parrish's best work. Looking back through the artist's earliest work in Philadelphia, first to the Mask and Wig Clubhouse, with its bulletin board, stein pegs and his first "Old King Cole", to the less known "Sand Man", then to the later "King Cole" in the Knickerbocker at New York, it does not seem extravagant to say that in this "Piper" a great artist has reached his climax. Of decorative paintings he will never do a better. That it is to be seen only by those entering the Men's Café is — well, it's too bad that so few people even know where to find the one very great decorative painting on the Pacific coast, a work the only rivals of which are Stetson Crawford's fine mosaic lunettes in the Federal Court Rooms at the Post Office Building.

A word for the brickwork of the old Palace. The demolition of it proved it to be a remarkable piece of

HOUSE IN PRESIDIO TERRACE.

THE GRANT HOUSE.
Hiss & Weeks, Architects.

construction. One of the first — if not the very first — big brick buildings in San Francisco, it antedated the steel frame and was in its day looked upon as a venturesome project in view of the known risks of earthquake. But its bricks and mortar were of the best — and the sound cohesion found later can only have resulted from care that the bricks were just sufficiently damp when mortar was applied to produce perfect setting conditions. Indeed, great chunks of masonry which had dropped from the topmost story were found to be intact, while other pieces had broken, not in the mortar joints, but through the bricks themselves. Throughout the walls and floors were many iron ties, placed with skill and judgment so that the articulation of the members was not far less perfect than one finds in a framed structure.

DETAIL OF THE NEWHALL HOUSE.
Bliss & Faville, Architects.

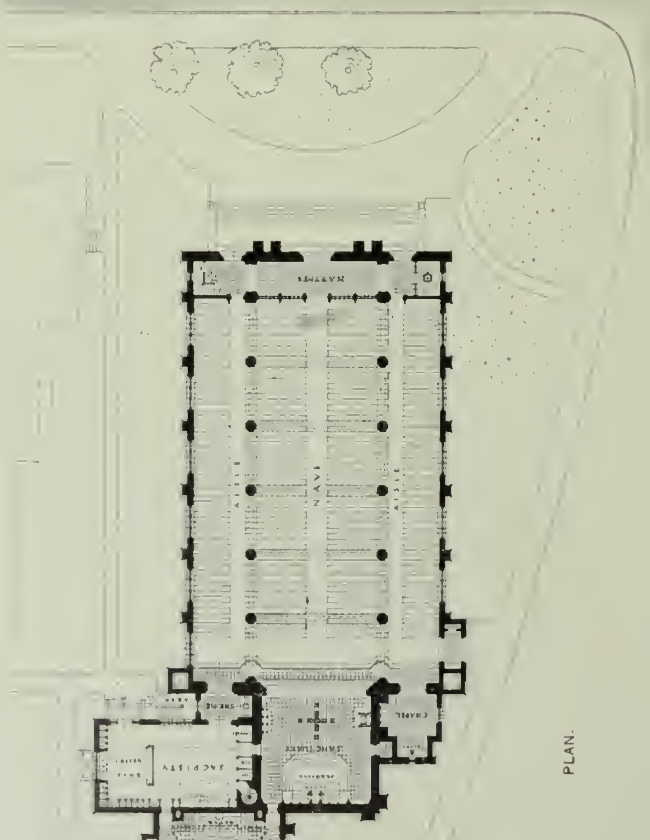
They are the most prominent hotels of which I have written; that there are others, many others, worthy of notice, did space allow, goes without saying. But they are of varying merit in design — and some excellent ones are mainly of other materials than brick or terra cotta.

The number of new apartment houses and flats is growing rapidly now, though it is only within the past year that many masonry buildings of these types have been begun. Those now partly up, or projected, will greatly add to the city's permanent housing capacity. Within the fire limits are several apartment houses by Frederick H. Meyer, of which the best seem to be St. Dominic and Chismore, placed on the northeast and northwest corners of Bush and Jones streets. Both are straightforward treatments of brick and terra cotta (with unfortunate galvanized iron bay windows) the St. Dominic being of buff bricks and the Chismore of selected common red, laid with broad light joints. Among other apartment houses may be mentioned the Charlemagne and Oliver & Foulkes "Keystone." It is still too early, however, to treat extensively of this type of building, while just over the line from the "fire limits" are great wooden-constructed apartments and flats by the hundreds. These will be regarded by their owners, I fear, as more permanent than their construction warrants; they are with few exceptions bad in design, pretentious and false. Between these apartments and the private houses are countless "flats," of which the accompanying illustration shows the average type in which brick has been used; they are all in the main wooden buildings.

ENTRANCE TO THE MINTZER HOUSE.

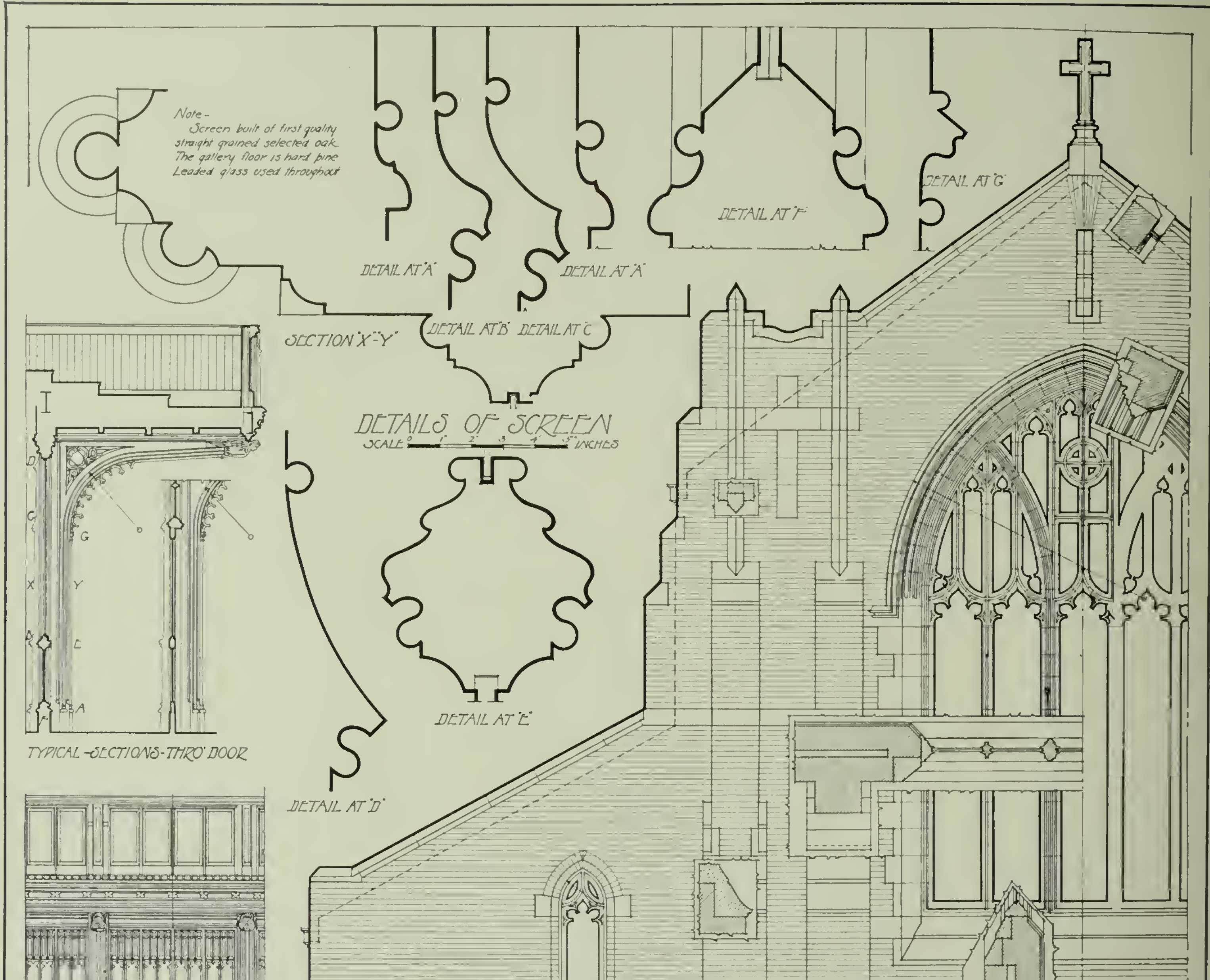
As to private houses, the number of good new ones of brick could almost be told on one's fingers. This is no place for brick houses to become the vogue. There is a popular myth that brick buildings are damp and chilly in a foggy, wind-blown climate, such as is that of San Francisco during the summer. And there are no two sides to the matter on the score of cost. Consequently the San Franciscan builds a house of wood — which, rarely, he veneers with brick; often he finishes the outside with stucco or stippled plaster, but

SAINT CATHERINE'S CHURCH, NORWOOD, MASS.
MAGINNIS & WALSH, ARCHITECTS.



PLAN.

SAINT CATHERINE'S CHURCH, NORWOOD, MASS.
MAGINNIS & WALSH, ARCHITECTS.



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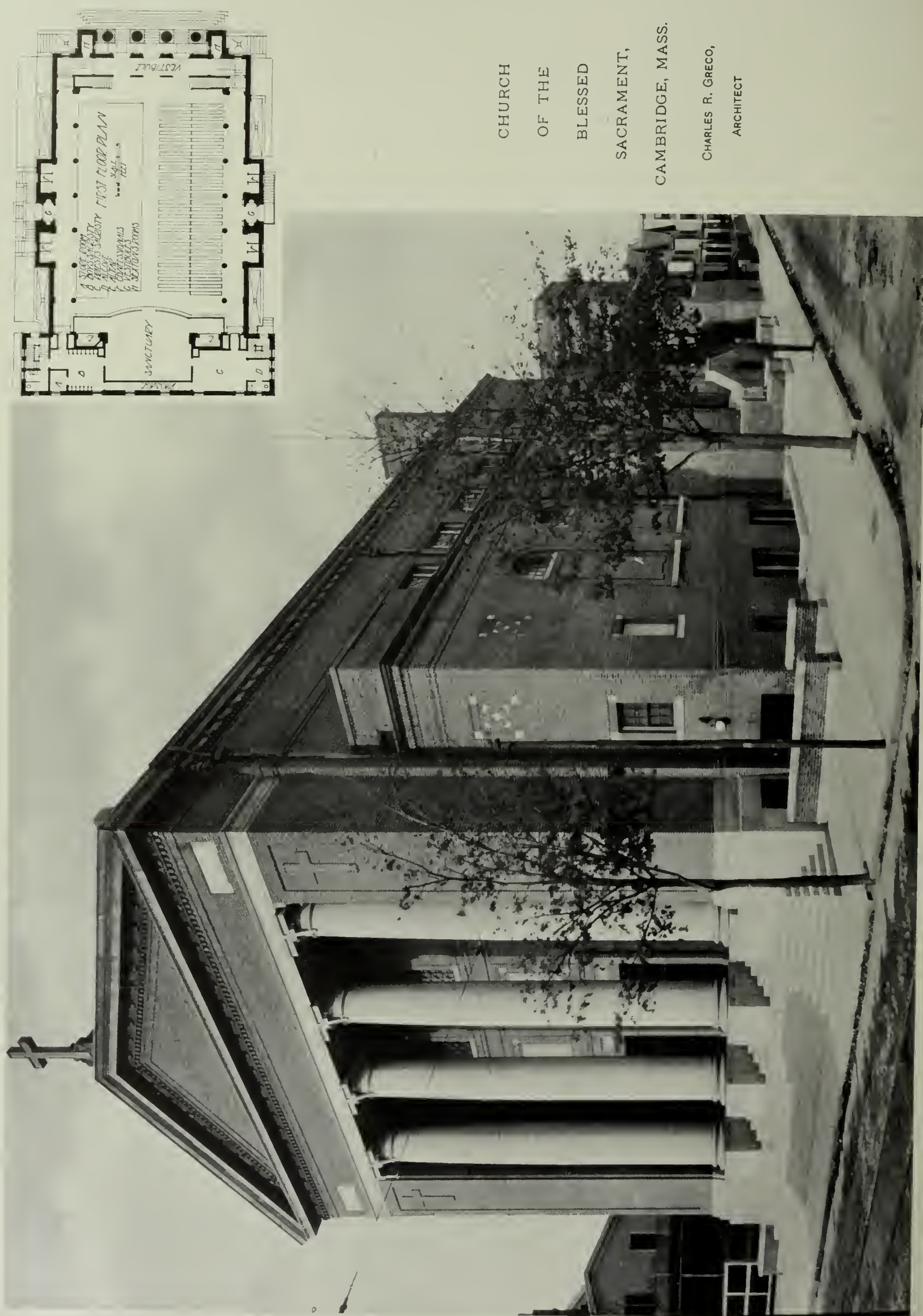
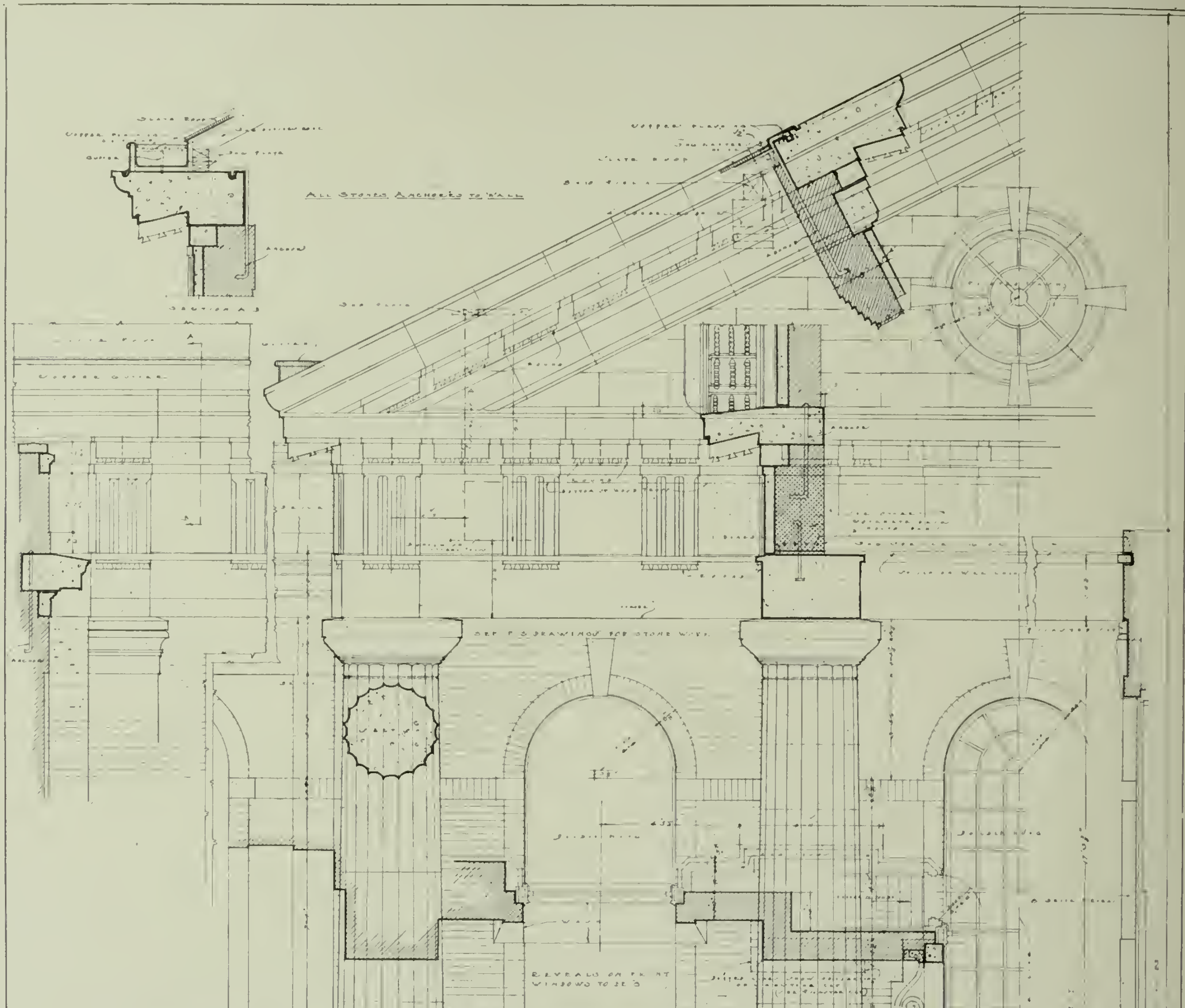
MAGINNIS & WALSH, ARCHITECTS.



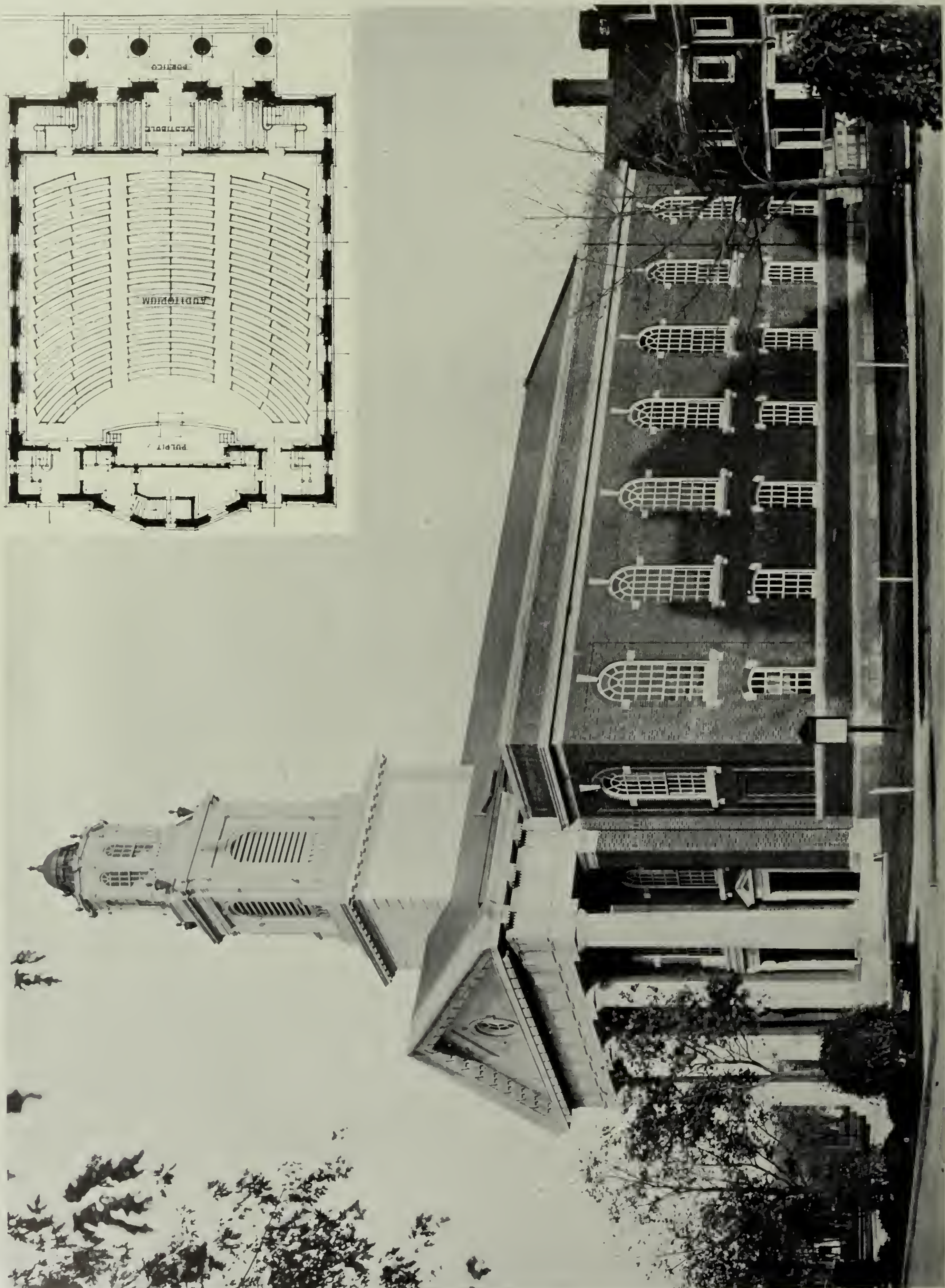
CHURCH OF THE BLESSED SACRAMENT, CAMBRIDGE, MASS.

CHARLES R. GRECO, ARCHITECT

FLATBUSH CONGREGATIONAL CHURCH, FLATBUSH, L. I., N. Y.
ALLEN & COLLENS AND LOUIS E. JALLADE, ARCHITECTS.



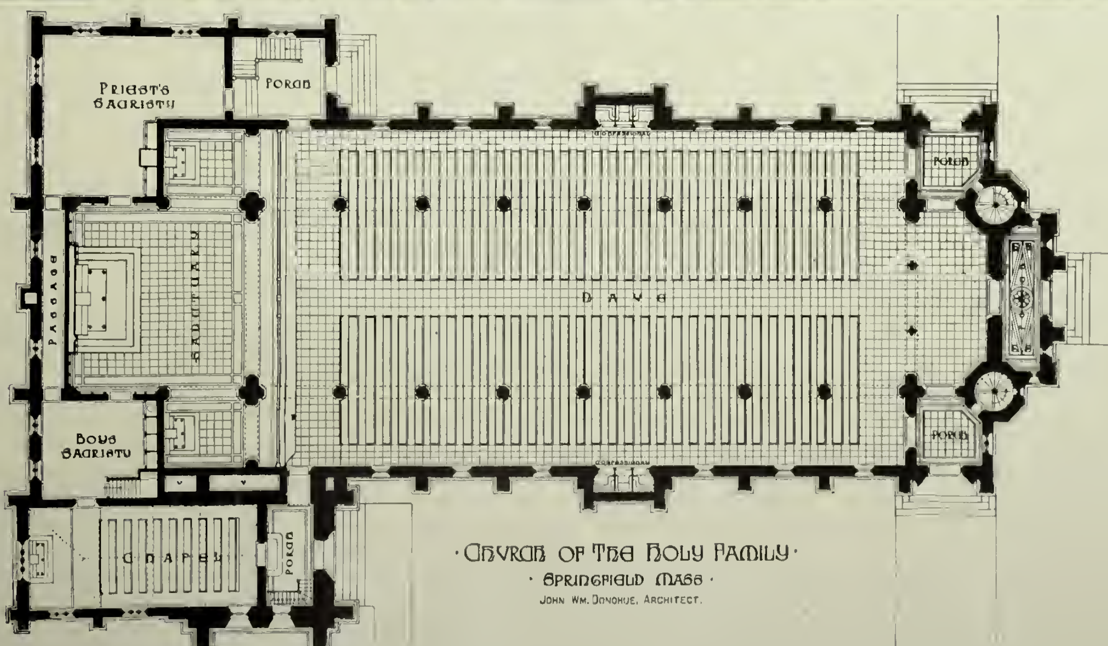
FLATBUSH CONGREGATIONAL CHURCH, FLATBUSH, L. I., N. Y.
ALLEN & COLLENS AND LOUIS E. JALLADE, ARCHITECTS.



FLATBUSH CONGREGATIONAL CHURCH, FLATBUSH, L. I., N. Y.
ALLEN & COLLENS AND LOUIS E. JALLADE, ARCHITECTS.

CHURCH OF THE HOLY FAMILY, SPRINGFIELD, MASS.

John Wm. Donohue, Architect.

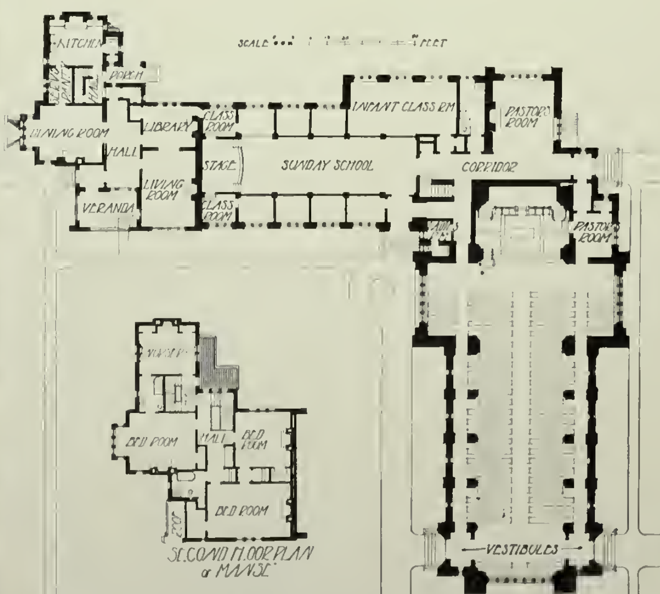


·CHURCH OF THE HOLY FAMILY·
· SPRINGFIELD MASS ·
JOHN WM. DONOHUE, ARCHITECT.

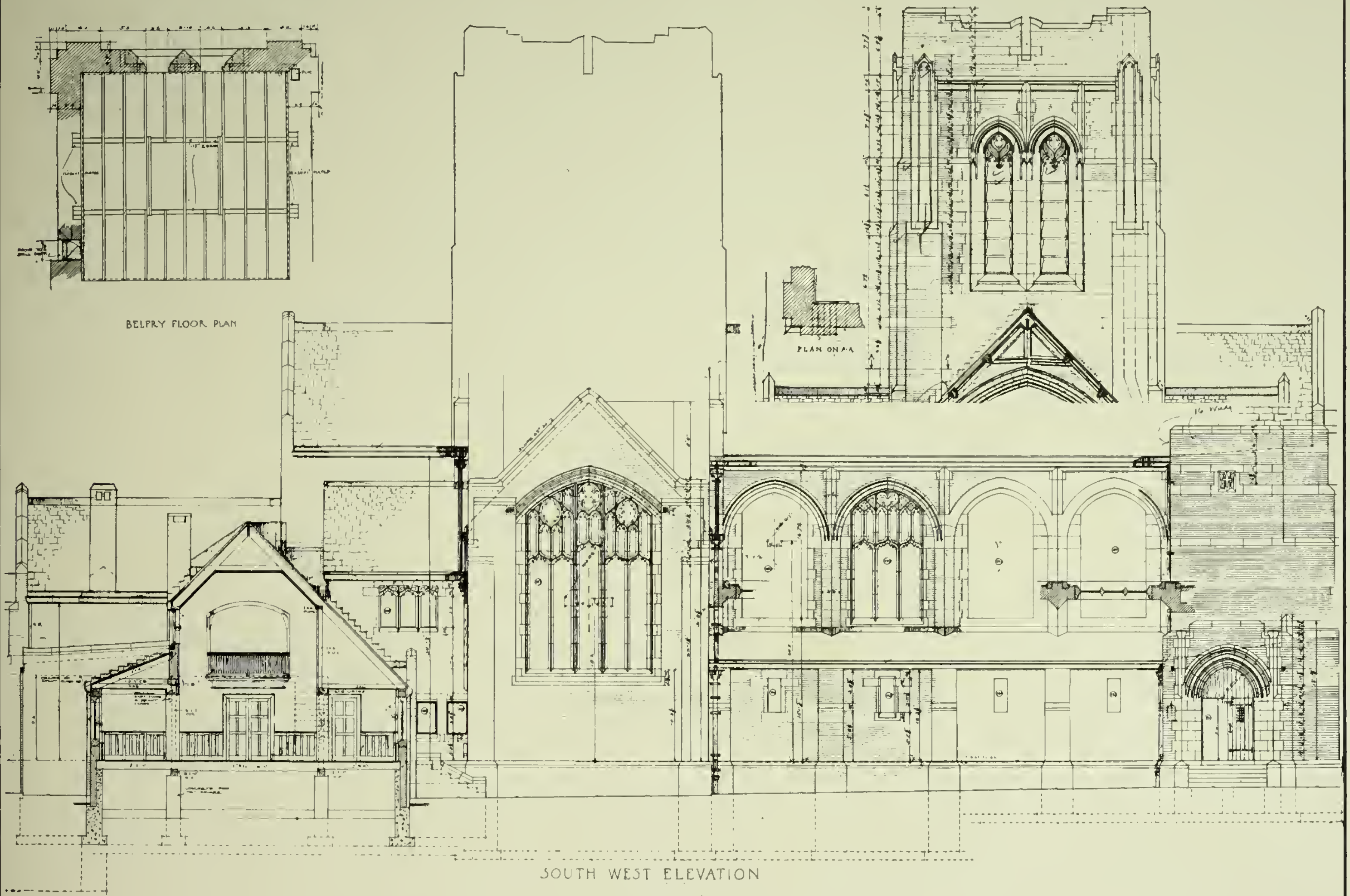
HOLY TRINITY CHURCH, WESTFIELD, MASS.
JOHN WM. DONOHUE, ARCHITECT.

FIRST PRESBYTERIAN CHURCH,
FAR ROCKAWAY, L. I., N. Y.

CRAM, GOODHUE & FERGUSON,
ARCHITECTS.

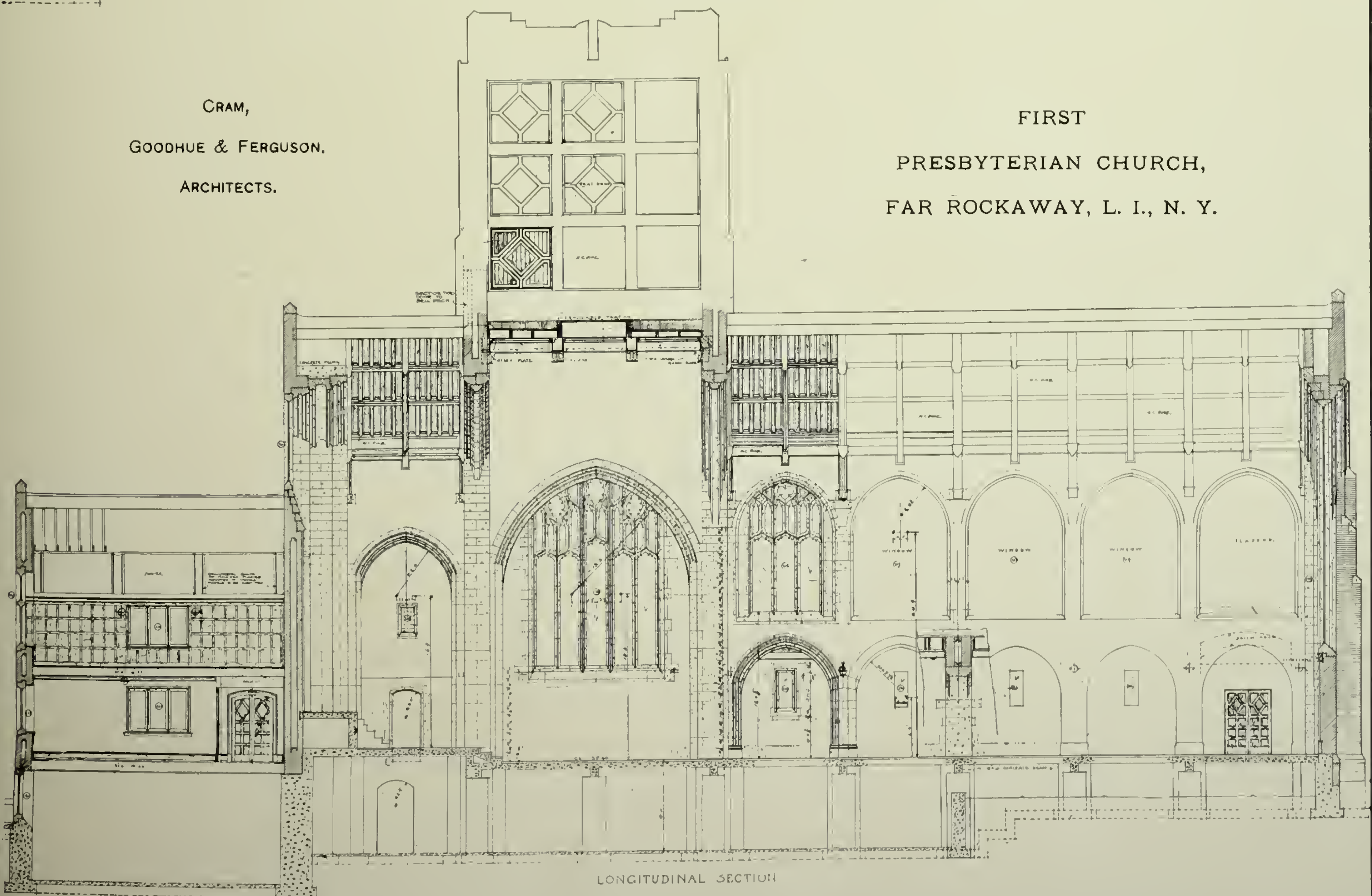


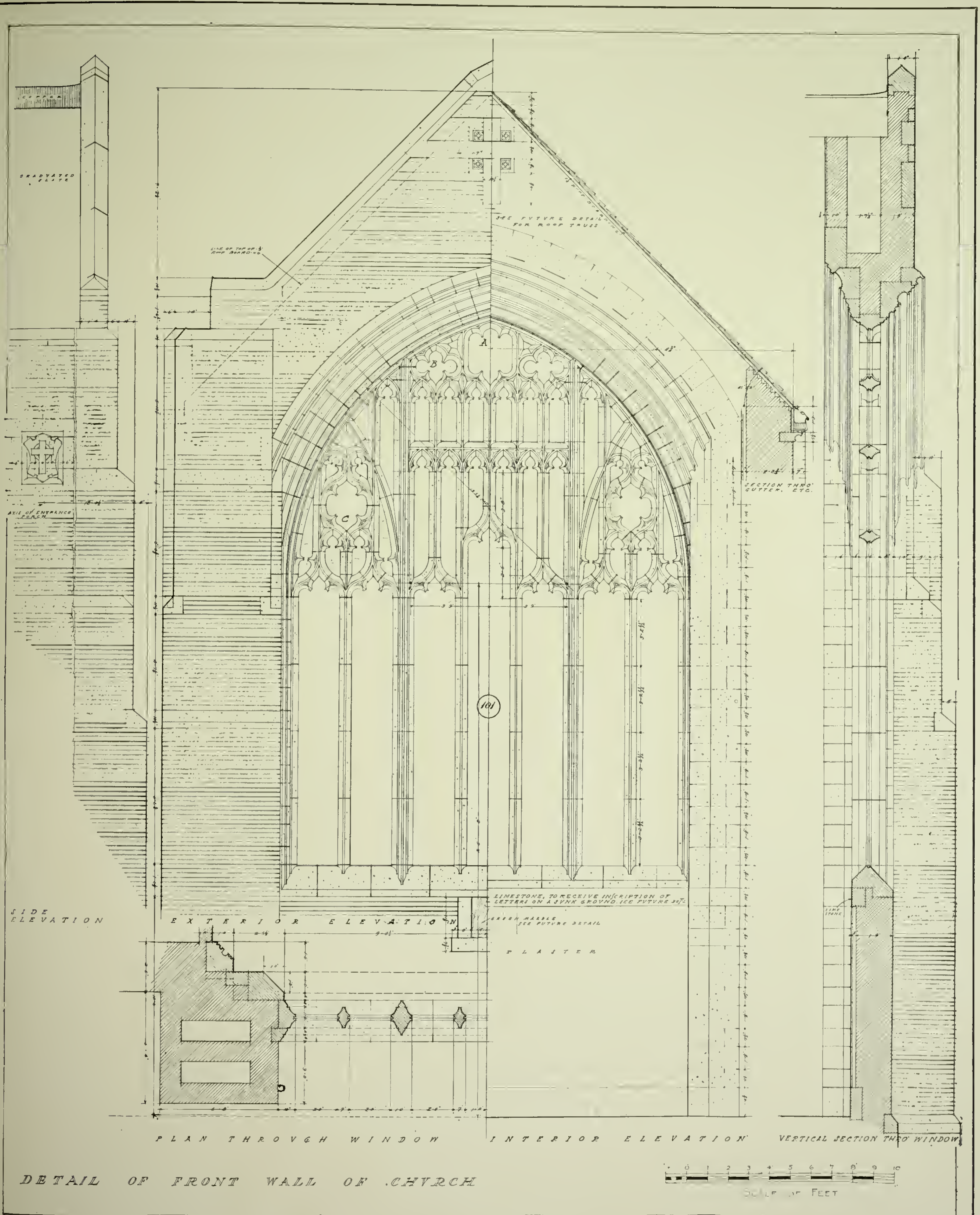
FIRST FLOOR PLAN of CHURCH AND MANSE



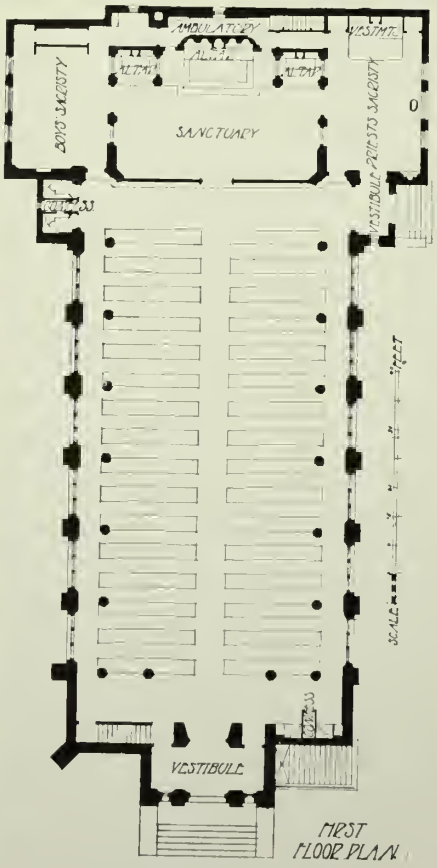
CRAM,
GOODHUE & FERGUSON,
ARCHITECTS.

FIRST
PRESBYTERIAN CHURCH,
FAR ROCKAWAY, L. I., N. Y.





FIRST PRESBYTERIAN CHURCH, FAR ROCKAWAY, L. I., N. Y.
CRAM, GOODHUE & FERGUSON, ARCHITECTS.



SAINT AGNES CHURCH,
READING, MASS.

MATTHEW SULLIVAN, ARCHITECT.

HOUSE IN PRESIDIO TERRACE.

many another here, is frankly foreign. A few, very few, other brick buildings there are on Pacific avenue in the five blocks between the Mintzer house and the Spooner (now Shainwald) house on the corner of Broderick. This house, by Ernest Coxhead, dates back like the Bourne house, several years, but is still among the best brick residences in the city.

Not far from here, at Green and Scott streets, is the Newhall house by Bliss & Faville, on another hill-slope site with fine marine and hill views to the north and east. In some respects this is one of the best houses — almost one is tempted to say it is the very best — in San Francisco. It is not *of* San Francisco, completely and positively, as are for example the Bourne and Mintzer houses; in it still is the marked McKim influence of Bliss & Faville's New York days. It has less warmth, less spontaneity and locality than might be wished.

In this sense, the house on Broadway west of Scott street is worthy of notice; of unfeigned English Georgian inspiration (both this and the Newhall house) to this Broadway place seems to have been imparted an atmosphere that lifts it completely from the English setting and appropriates it to its new surroundings; it is no longer alien, but has become "naturalized."

Two other brick houses are illustrated — these from Presidio Terrace. One just inside the Gates, has an elaborate "wiggly" shingle roof and heavy rolled eaves (such as — for wiggle and roll — far surpass all of its recent generally he uses shingles — when he has unpretentious taste — or else painted "siding" and plaster ornament with a dash of rustication and a few odd quoins if the owner chances to be in competition with the neighbor across the way.

HOUSES AT PACIFIC AVENUE AND WEBSTER STREET, THE MINTZER HOUSE, ALBERT FARR, ARCHITECT, AT THE CORNER, AND THE EPISCOPAL RESIDENCE, BLISS & FAVILLE, ARCHITECTS, AT RIGHT.

Out in the Western Addition, on Presidio Heights, are several groups of brick houses comparatively new, though some of them were under construction at the time of the fire. By all odds the best is that block on Webster street from Pacific avenue to Broadway. Here is Albert Farr's strongly individual Mintzer house, on the corner of Pacific and Webster, with its imposing entrance gates and bright flower-lined approach. Bliss & Faville's charming Elizabethan residence of Bishop William Ford Nichols stands in the middle of the block, opposite the house of W. B. Bourne by Willis Polk (the Bourne house is not now new, but will long be one of the best in the city). On the corner of Broadway and Webster street is Joseph D. Grant's handsome house which, from the brow of the hill, commands a superb outlook northward across the Golden Gate, over Alcatraz Island, to the Marin Hills and Mount Tamalpais; one of the rare opportunities this was — such as comes to a favored architect once in a lifetime. The Grant house is of red brick, with limestone trimmings, and in design is a perfectly safe "Louis Seize" — a building having much dignity but which, like

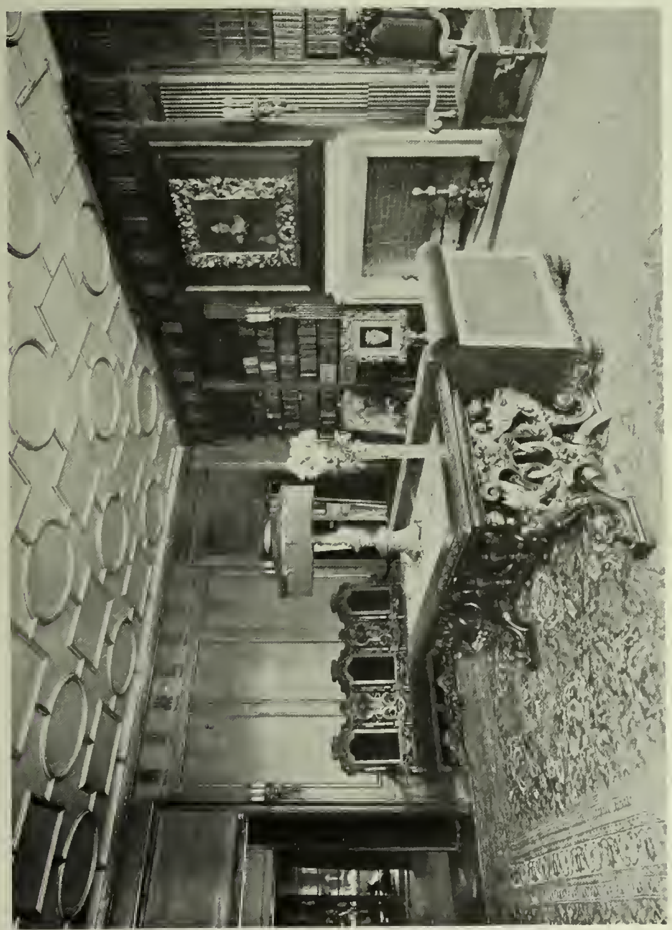
A HOUSE ON BROADWAY.

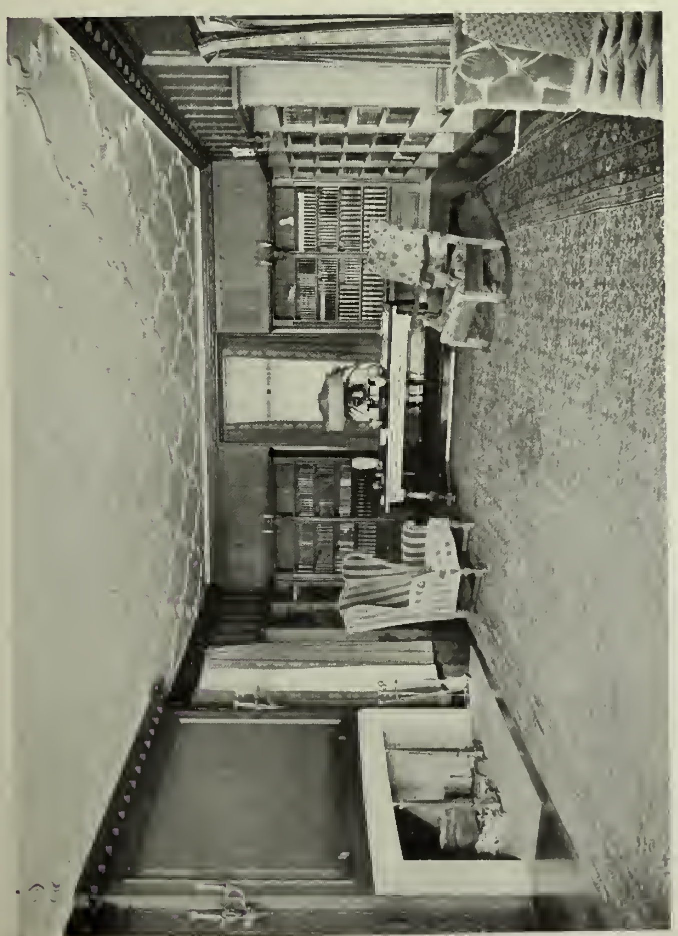
prototypes in the east). It is interesting mainly for the texture of its "tapestry" brick wall; the belt below the second story windows is of light stretchers with very dark headers, and the wall above it is in alternate light and dark stretchers forming a pattern of diagonal lines in the Flemish bond (of which all headers are dark). The other Presidio Terrace house has the local quality; bigness, openness, frankness. A photograph loses much of the beauty of this building, which is partly in the color of rough brickwork and weathered redwood shingles.

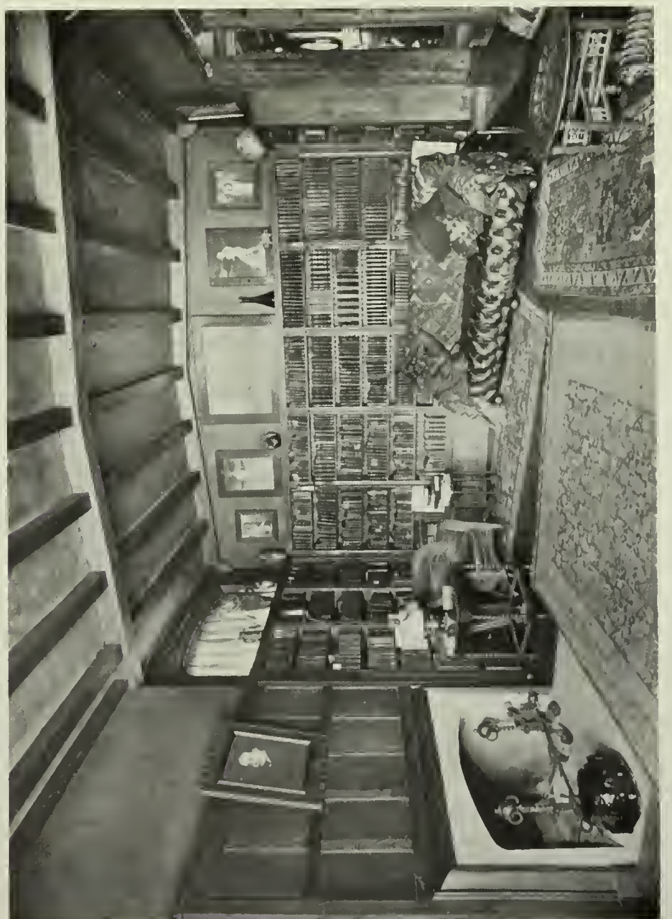
If the number and importance of these residences seem small, let the situation be remembered. Here was a great community of people whose incomes had been wiped out almost over night. Their business affairs, private and public, had to be reorganized, and only by dint of using every dollar that could possibly be pulled together. Even under normal conditions it is only the families of the well-to-do classes here who would think for a moment of building masonry houses, and most of them already had out-of-town houses to which they could go and find comfort. They were living, too, in such a climate that the question of housing is never serious to any one, rich or poor, except during the few months of the rainy season. Thousands of these people had lost treasures that money could never replace — homes which associations had made dear, so they have, many of them, been reluctant to rebuild in the city — while others have been indifferent or procrastinating. It must be remembered, too, that there has been much uncertainty as to the ultimate destiny of various neighborhoods — and until the lines of business and apartment house districts are more exactly defined there will be but few of the finer town houses built. Nor can it be overlooked that San Franciscans are great travelers — that to many of the more prominent among the older wealthy families London, Paris and New York are now almost as familiar as the city by the Golden Gate; so they have their real homes out at Burlingame, San Mateo, Belvedere or San Rafael, and for the present those who lost their town houses know how well the Palace, St. Francis or Fairmont meet all their needs when they are staying in town.

DETAILS OF PALM COURT, PALACE HOTEL.

After all's said, too, a house is really of less importance to the people here; out of doors they've been a great part of the time all their lives. He who leads cotillion figures "in the season" may soon afterward lead a pack mule on the trail, during a summer outing. Three generations at best he may be removed from the cabin and the camp, but he (and "she" too, often) fits in now equally well in a drawing room or up in the Sierras, under the pines. He who knows the inward meaning of life in California is, in spirit, always near the outpost, and within hail of the primitive.







FOUR LIBRARY ROOMS, BY HOWARD VAN D. SHAW, ARCHITECT.

TWO HALLWAYS, BY HOWARD VAN D. SHAW, ARCHITECT.

FOUR DINING ROOMS, BY HOWARD VAN D. SHAW, ARCHITECT.

Plate Illustrations — Description.

Saint Catherine's Church, Norwood, Mass. Plates 143, 144, 145. This structure combines a church of large area and an independent morning chapel. The latter feature is an unusual one in the American Catholic parish church building and is designed to take the place of the unhealthy basement. The building is designed in a soft grey brick with limestone trimmings. The roof is of green slate and the woodwork throughout is of oak. The chancel of the church and that of the chapel are so related that one sacristy directly serves both. An interesting feature of the plan is the small devotional Chapel of the Blessed Sacrament on the left-hand side of the main chancel. The chancel itself is unusually deep and its square termination has given opportunity for a great mullioned window high up over the altar The vestibule of the church is divided from the main auditorium by a wooden screen and the gospel side of this vestibule is to be used as a baptistery. Another feature of the interior is the constructional use of stone on the structural lines giving an effect of vitality which is not otherwise possible. The roof is of timber construction with the ceiling paneled between the trusses. The seating capacity of the church is 1,000 and the morning chapel about 300. In the latter are situated the confessionals arranged in recesses. The altar and reredos of the chapel are of oak. The tower occupies an unusual relation, rising as it does from the chancel walls. Two objects were sought by this disposition; an unusually deep sanctuary, and a dominating feature on the exterior at a small expense.

Church of the Blessed Sacrament, Cambridge, Mass. Plate 146. The exterior of this building is built of water-struck brick with limestone trimmings. The roof consists of slate and copper flashings. The decoration of the interior has not been completed. The main auditorium will seat 1,000 and the basement 900. The building exclusive of interior and architect's commission cost approximately 8½ cents per cubic foot. This figure is obtained by taking the outside dimensions of walls and the height from the underside of the basement floor to half the distance on the pitched roof.

Flatbush Congregational Church, Flatbush, L. I., N. Y. Plates 147, 148, 149. This church is designed in six different shades of "Tapestry" brick ranging from an Indian red to a deep blue. The interior wall surface has a sand finish for the plaster which is a combination of crushed white marble and plaster and gives the effect of a cream tone. The trim throughout is of pine, enameled white, while the doors are of mahogany. The floor is of North Carolina pine stained and varnished to a deep brown. The aisles are provided with deep blue carpets. The pews are white with mahogany ends and mahogany rails, while the pew cushions are of a lighter blue than the carpet. In the galleries there are boxes which contain six chairs instead of the regular pews. The pulpit furniture has been made up of old Colonial so as to keep this character at the end of the building. The seating capacity of the main floor is 500, of the gallery 200. In the basement there is a seating capacity similar to that of the main floor. The cubical contents is 387,800 cubic feet. The total cost of the church was $65,000, and the approximate cost per cubic foot was 18 cents. In cubing this building the measurements were taken from the level of the basement floor half way up to the mains of the roof, and horizontally the dimensions were taken from the exterior brick walls. The tower was taken from the commencement of the roof to the peak and the horizontal dimensions were from the extremes of corners.

DETAIL, CHURCH OF THE BLESSED SACRAMENT, CAMBRIDGE, MASS.
Charles R. Greco, Architect.

Holy Family Church, Springfield, Mass. Plates 150, 151. The Holy Family Church, which is 166 feet long and 66 feet wide, is built of Harvard brick in various shades, laid up with white mortar in Flemish bond. The trimmings are of grey terra cotta, and over each entrance is a carved stone tympanum, each pertaining to the Holy Family. The tympanum over the main front entrance is emblematic of the Blessed Sacrament. Upon the interior the church is finished in quartered oak stained an old English color. The decorative scheme was planned with the thought of restfulness; the side walls of the nave are of a mottled green tone, devoid of decoration, the walls being relieved by grey canyon stone columns, arches and window trim; the ceiling is of gold with a green overglaze, and the panels are illuminated with emblems of the sacraments and the passion. The sanctuary is richly decorated in gold with overglazes of red, green and gold. The main altar and the reredos are of quartered oak. The nave of the church is lighted by sixteen stained glass windows.

Holy Trinity Church, Westfield, Mass. Plate 152. The Holy Trinity Church is built of red sand-struck brick with trimmings of grey brick and grey terra cotta. It takes for its prototype Saint Zeno's in Verona, Italy. The church is 120 feet long and 52 feet wide, with a seating capacity of 700. Upon the interior the body of the church is decorated in plaster tinted a grey green with an ornamental border over the dado and around the windows. The Clerestory is finished in a lighter shade of green with soffits very richly ornamented. The ceiling is paneled with borders in variegated colors. The lower part of sanctuary has a rich red tone, above which are five panels each having a life-size picture of a saint. The altars are of Tennessee and Sienna marbles enriched in gold. The woodwork and pews are stained and finished in weathered oak.

First Presbyterian Church, Far Rockaway, L. I., N. Y. Plates 153, 154, 155. The exterior of this building is finished in red brick with concrete stone trimmings. Upon the interior the wall surfaces are of plaster with the general appearance of a warm light earth color. The ceiling of the crossing is decorated with color and gold. The roof trusses and ceiling of nave and crossings are of Carolina pine. The floor is of granolithic enriched in the chancel with Welsh quarry and mercer tile. The woodwork is of oak, touched in certain places with color and gold and the communion table is of stone. The church seats a little over 450 and the parish hall 300.

Saint Agnes Church, Reading, Mass. Plate 156. This church has an exterior treatment of red sand-struck brick laid up in Flemish bond with mat glazed terra cotta trimmings. The roof consists of variegated slate. Upon the interior the walls are finished in tinted plaster. The trim, railing and pews are of oak stained brown while the floor is of hard pine. The main floor seats 700. A special feature of the planning is the seclusion of the confessionals and chapels. The total cost of building was $32,000.

Editorial Comment and Miscellany.

JOHN LA FARGE.

JOHN LA FARGE, the student of letters and art, died Monday evening, November 14th, in his seventy-sixth year. Mr. La Farge was born in New York City, March, 1835. After obtaining a classical and legal education he traveled abroad for the study of art.

As a painter his work was one of continual progress and success. He was pronounced after the death of Puvis de Chavannes as the greatest living mural painter. At the annual dinner of the Architectural League in January, 1909, he received the medal of honor. His paintings are to be found in residences and churches in every city east of Chicago.

Mr. La Farge was an author of no mean ability. He wrote among other things, "Artist's Letters from Japan," "Artist and Writer" and "Lectures on Art."

But his achievement in glass is the most imposing monument to his genius. In the early seventies he became interested in problems of glass-making. He worked, mastered and introduced to the world the new material known as "American" glass. He changed the entire art of the glass stainer from the making of new glass by new methods to the painting of the same. A number of his windows are in the Trinity Church, Boston, and Memorial Hall, Cambridge, Mass. The last window produced by him is the "Peacock Window" in the Worcester Museum, which work is expressive of a marvelous sense of color.

Mr. La Farge was president of the Society of American Artists; president of the Society of Mural Painters and Honorary Member of the American Institute of Architects. In 1889 he was made Chevalier, and in 1901 Officer of the Legion of Honor.

The loss of Mr. La Farge as a painter, author, inventor and artist is inestimable and leaves a place in the world of art that cannot be filled.

DAYTON DAILY NEWS BUILDING.
Exterior treated in Atlantic cream mat terra cotta furnished by Atlantic Terra Cotta Company.

ANNUAL CONVENTION OF A. I. A.

THE annual convention of the American Institute of Architects will be held in San Francisco on the 17th, 18th and 19th of next January, and the San Francisco Chapter is taking special interest in the event, hoping for a large attendance from the eastern cities. They are anxious that it shall be a success from a numerical standpoint, and call attention to the pleasures of a winter trip to the Pacific Coast. The country generally and the parks, while always green and in bloom, are specially attractive in January. California's college towns — Berkeley and Palo Alto — are within an

DETAIL OF PAROCHIAL SCHOOL AND CONVENT, BROOKLYN.
By Atlantic Terra Cotta Company.
George H Streeton, Architect.

hour's ride by train or automobile. Good roads make it possible to motor to many picturesque towns within a few hours of the city. The winter pleasures of Del Monte are already well known to eastern tourists. Mount Hamilton with Lick Observatory on its summit, and the ascent of Mount Tamalpais by a scenic railroad, are short pleasurable trips, affording panoramic views of the ocean, bay and the towns below. San Francisco in itself has much to interest visitors. The fact that it has been entirely rebuilt within four years will specially interest architects. The drives throughout the city afford splendid views of the surrounding bay and ocean. To the southward are the cities of Santa Barbara, Los Angeles, Pasadena, Coronado and San Diego, with their orange groves and other semi-tropical scenery. Should the northern route be selected for the homeward journey, Portland, Tacoma, Seattle and the other prosperous northwestern towns can be visited.

HOUSING PROBLEM IN GERMANY.

DR. ALBERT SUEDEKUM who represents Nuremberg in the German Reichstag country has been visiting our larger cities recently and inquiring into municipal problems, especially the problem of the congestion of population. Dr. Suedekum is an expert on municipal matters, having been one of the editors of the standard German annual encyclopedia, in which may be found statistics and particulars about every German town of any importance. In discussing the subject of congestion Dr. Suedekum says that one of the methods by which Germany is solving the housing problem is the establishment of cheap commutation rates for workmen. The railroads grant near Berlin such low rates to workmen that they can live twenty miles out in the country at a weekly cost in fares of only 40 cents while some of them who are nearer pay only 25 cents a week.

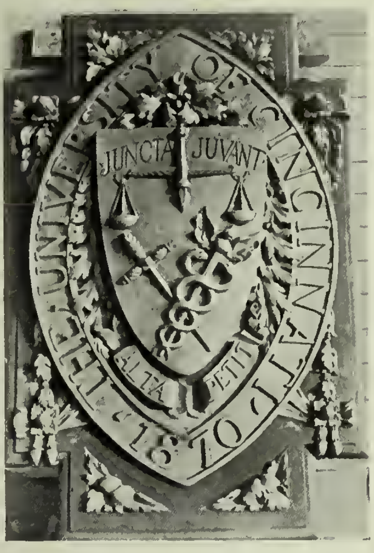
DETAIL OF UNION BANK, OPELANSAN, LA.
By Atlantic Terra Cotta Company.
Favrot & Livaudais, Architects.

Dr. Suedekum also spoke of the tendency that has been apparent in our cities to erect larger tenements instead of two or four family houses. "In Berlin," said the doctor, "we have restrictions on the height of our buildings. In the center of the city no building of more than six stories may be put up, and the top floor may be used only for business, while in the suburban regions no one may build higher than three stories and a mansard. So the tenement house nuisance is kept

INTERIOR OF CHAPEL AT WEST POINT.
Gothic vaulted ceiling of Guastavino construction.
Cram, Goodhue & Ferguson, Architects.

down. But I believe that it will soon be recognized that it does not pay to build lofty tenements. We made careful investigation of the matter in Germany, and came to the conclusion that even with modern methods of construction it does not pay to build higher than four stories. That is to say, the income derived from the fifth and sixth stories is no more than the extra outlay they occasion. So we have hopes that even capitalists, for selfish reasons, may give up building tenements of great height."

Dr. Suedekum's experiments have shown that much may be done to remedy housing conditions on a business basis. He claims it is possible in Germany to put up a number of two and four family houses each in its own little garden, and provide for every twenty houses or so a park or playground for the children, and yet earn six per cent. The cost of an apartment with a large kitchen, two rooms, a scullery, and a bathroom is from $110 to $120. The chief restriction placed on the workman by the associations through whom the capital is lent, is that he shall not take in any lodgers. By this means any congestion of population is prevented.



DETAIL OF GYMNASIUM, CINCINNATI.
By Winkle Terra Cotta Company.
Garber & Woodward and Tietig & Lee, Associate Architects.

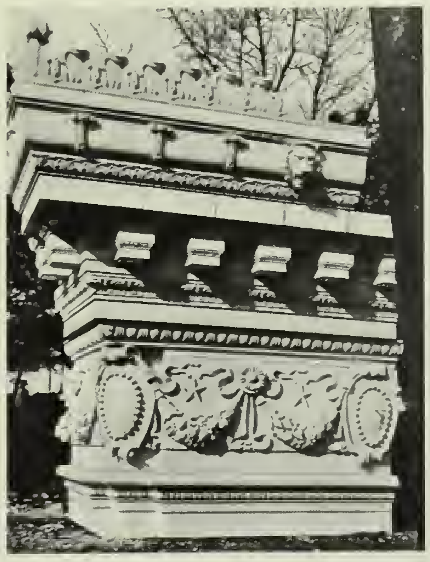
Dr. Suedekum was not inclined to discuss American conditions, as he had not had the time to study the problem as it is felt in our cities. However, he thought that much could be done by a proper system of taxation of undeveloped lands, together with cheaper fares by the railroads.

FIREPLACE, ELKS CLUB, BILLINGS, MONTANA.
G. McAllister, Architect.

AUTOMOBILE SALES BUILDING, CHICAGO.
Cream enameled terra cotta trimmings, manufactured by the Northwestern Terra Cotta Company.
William Ernest Walker, Architect.

NEW WOOLWORTH BUILDING.

ON THE site of Mayor Philip Hone's famous Broadway residence "opposite the park" is to be erected a towering office building, for which plans have just been completed by the architect, Cass Gilbert. The structure will have a frontage of 105 feet on Broadway, and 197 feet on Park Place and will cost close to $5,000,000. The plans filed last week for the foundations alone aggregate $500,000 in cost. From the sidewalk to the top there will be forty-five stories, the total height being 625 feet. The main building will rise to a height of twenty-six stories, and the tower beginning at that point will contain nineteen stories. This tower will be the spectacular feature of the building, as its pinnacle which will be brilliantly illuminated at night will be discernible at a distance of 50 miles or more from the city. There will be thirteen stories in the main tower section which is 86



DETAIL OF CORNICE FOR THE CORN EXCHANGE BANK BUILDING, CHICAGO.
By American Terra Cotta & Ceramic Company.
Shepley, Rutan & Coolidge, Architects.

feet square, while the upper part is to be treated in four stages. One of the many novel features will be a large swimming tank in the basement lined with marble together with shower baths, lockers, and other conveniences. The building will contain a well-equipped gymnasium and running track on the roof.

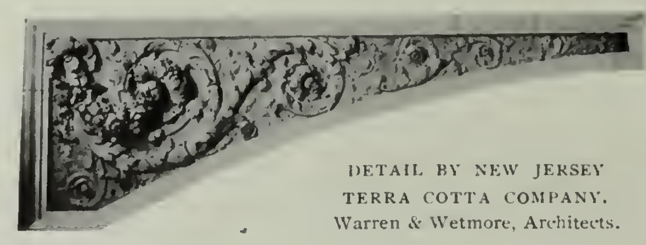
FIREPLACE EXECUTED BY THE ROOKWOOD POTTERY COMPANY.

INTERIOR OF CHAPEL AT WEST POINT.

OF THE recent examples of ecclesiastical architecture executed in the vicinity of New York, few have attracted more attention than the chapel at the West Point Military Academy, Cram, Goodhue & Ferguson, architects, an interior view of which is given in this issue. Another example of the possibilities of burnt clay materials is here shown in the Gothic vaulted ceiling of Guastavino construction, whose soffit is laid in flat tiles varying in size from 4 by 8 inches to 8 by 16 inches — in random courses throughout the work, which gives a very interesting effect.

THE Western Architectural Clubs are imbued with the spirit of progressiveness. The San Francisco Club has a class of forty in design, fifty in structural engineering and many more in architectural history. Other classes, such as life class, free-hand drawing, and architectural rendering are in preparation. The Los Angeles Club has also started many new classes with splendid opportunities from an educational standpoint.

DETAIL BY NEW YORK ARCHITECTURAL TERRA COTTA COMPANY.
E. F. Guilbert, Architect.



DETAIL BY NEW JERSEY TERRA COTTA COMPANY.
Warren & Wetmore, Architects.

OAKLAND ARCHITECTURAL CLUB.

THE architects of Oakland, Cal. have organized a club known as the Oakland Architectural Club. Considerable attention will be paid to the atelier work, exhibitions, etc. The officers elected for the ensuing year are: President, Hart Wood; vice-president, E. B. Mead; secretary-treasurer, W. J. Wilkinson. Directors: John Galen Howard, Louis C. Mullgardt, Oswald Spier and C. E. Richardson.

IN GENERAL.

W. E. Nelson has opened up offices at 1009 Spalding Building, Portland, Ore., for the practice of architecture.

The terra cotta used for the Holy Family Church, Springfield, and the Holy Trinity Church, Westfield, as illustrated in this issue, was supplied by the Atlantic Terra Cotta Company.

The Palace Hotel at San Francisco, Trowbridge & Livingston, architects — see illustration page 248 — was built of brick made by the Hydraulic-Press Brick Company of St. Louis.

DETAIL BY SOUTH AMBOY TERRA COTTA COMPANY.
E. F. Guilbert, Architect.

Announcement is made of the dissolution of the architectural firm of Charles Henry & Son, Akron, Ohio. Leroy W. Henry has formed a co-partnership with Milton E. Murphy under the firm name of "Henry & Murphy Successors to Charles Henry & Son."

The architectural firm of Foltz & Parker has dissolved partnership. Hereafter Herbert Foltz will occupy offices at 1108 Indiana Pythian Building and Wilson Parker at 713 Traction Terminal Building, Indianapolis.

The Atlantic Terra Cotta Company will furnish polychrome terra cotta for the Bevier Memorial Building, Rochester, N. Y., Claude Bragdon, architect; polychrome terra cotta for the Hampson Building, Waterbury, Conn., Griggs & Hunt, architects; grey terra cotta for the Knickerbocker Trust Building, New York City, McKim, Mead & White, architects; white mat glazed terra cotta for the White Shoals Lighthouse, Milwaukee, Wis., Maj. W. V. Judson, U. S. A.; white mat terra cotta for the Robert Burns Building, New York City, Buchman & Fox, architects; grey terra cotta for stable and garage, Rochester, N. Y., Donn Barber, architect; grey terra cotta for the East River Savings Bank, New York City, Clinton & Russell, architects.

The fireplace of the Elks Club at Billings, Montana, a view of which is shown on page 261, is laid up in "Tapestry" brick. The color scheme is a soft blending of browns and dark reds. The mortar joint of cream is 5/8-inch wide with rough cut flush, lending a rough texture to the ensemble. The brick was furnished by Fiske & Company, Inc.

DETAIL OF MUNICIPAL BUILDING, SPRINGFIELD, MASS.
By Conkling-Armstrong Terra Cotta Company.
Pell & Corbett, Architects.

The brick used in the construction of the Congregational Church, Flatbush, L. I., Holy Family Church, Springfield, and the Holy Trinity Church, Westfield — all of which buildings are illustrated in this number — was furnished by Fiske & Co., Inc.

The materials used in the frieze of the Metropolitan Life Building, San Francisco, and for the tile panels in the interior of the Lincoln Park Refectory, Chicago — both of which buildings were illustrated in the October number of The Brickbuilder — were furnished by the Rookwood Pottery Company.

As a result of the wholesale test on one section of the Price Baking Powder Building, Chicago, Cabot's waterproof brick stain is being applied to the whole building as an absolute cure for a most aggravated case of porous bricks which has already caused the owners considerable trouble and expense.

The American Enameled Brick & Tile Company announce the removal of their office from 1 Madison avenue to the fifteenth floor of the Centurian Building, 1182 Broadway, New York City.

COMPETITION FOR A HOTEL IN AN AMERICAN CITY OF MODERATE SIZE.

FIRST PRIZE, $500. SECOND PRIZE, $250. THIRD PRIZE, $150.
FOURTH PRIZE, $100. HONORABLE MENTIONS.

COMPETITION CLOSES AT 5 P.M., MONDAY, JANUARY 16, 1911.

PROGRAM.

THE problem is a HOTEL OF MEDIUM SIZE, planned to meet the ordinary demands of a small American city. The site is assumed to be at the corner of two intersecting streets; the lot ample in size to accommodate the building and practically level.

The size and shape of the building are left entirely to the designer, except that not less than one hundred and not more than one hundred and twenty-five sleeping rooms are to be provided above the second floor. At least one-half of the sleeping rooms are to have bathrooms and the others may be provided with toilet and shower accommodations.

The ground or first floor plan is to provide the usual accommodations which are necessary in a hotel of this size.

The second floor plan may be given over in whole or in part for family suites, reception rooms, small meeting rooms, etc., etc.

The upper floor plan should provide for a large social hall to be used for banquets, dances, and similar functions. In connection with this social hall, and on the same floor, there should be provided suitable reception rooms, coat rooms, smoke room, service rooms, toilet rooms, etc., etc.

A roof garden may or may not be incorporated in the design.

It is assumed that the basement plan provides the necessary space for mechanical equipment, storage rooms, kitchen, lavatories, barber shop, and perhaps a rathskeller, but the plan of this floor is not required.

The exterior of the building is to be designed entirely in architectural terra cotta, and it is suggested that at least portions of the walls be treated in color.

The chief object of this competition is to encourage the study of the use of architectural terra cotta. There is no limit set on the cost of the building, but the design must be suitable for the character of the building and for the material in which it is to be executed.

The following points will be considered in judging the designs:

A. The general excellence of the design and its adaptability to the prescribed material.
B. The intelligence shown in the constructive use of architectural terra cotta.
C. Excellence of plan.

DRAWINGS REQUIRED.

On one sheet, the principal elevation drawn at a scale of 8 feet to the inch. On the same sheet, the first and second floor plans, a typical bedroom plan, and the upper floor plan, drawn at a scale of 16 feet to the inch; also a small sketch plan of the roof garden if that feature is provided for. On this same sheet, if space permits, give sketch of an interesting interior.

On a second sheet, the elevation of secondary importance drawn at a scale uf 16 feet to the inch, and a sufficient number of exterior details drawn at a scale of ½ inch to the foot to fill the sheet.

The details should indicate in a general way the jointing of the terra cotta and the sizes of the blocks. The colur scheme is to be indicated either by a key or a series of notes printed on one of the sheets.

The size of each sheet (there are to be but two) shall be exactly 36 inches by 24 inches. Strong border lines are to be drawn on both sheets, 1 inch from edges, giving a space inside the border lines 34 inches by 22 inches. The sheets are to be of white paper and unmounted.

All drawings are to be in black ink, without wash or color, except that the walls on the plans and in the sections may be blacked-in or cross-hatched.

Graphic scales to be on all drawings.

Each set of drawings is to be signed by a *nom de plume*, or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat, or rolled (packaged so as to prevent creasing or crushing) at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., charges prepaid, on or before January 16, 1911.

Drawings submitted in this competition must be at owner's risk from the time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names, ten cents in stamps.

The designs will be judged by three or five well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

The manufacturers of architectural terra cotta are patrons of this competition.
The competition is open to everyone.

Program for The Brickbuilder Annual Terra Cotta Competition, page 286

THE BRICKBVILDER AN ARCHITECTVRAL MONTHLY

VOL. 19

DECEMBER 1910

NO. 12

PVBLISHED BY ROGERS & MANSON
EIGHTYFIVE WATER STREET BOSTON MASS.

THE BRICKBUILDER

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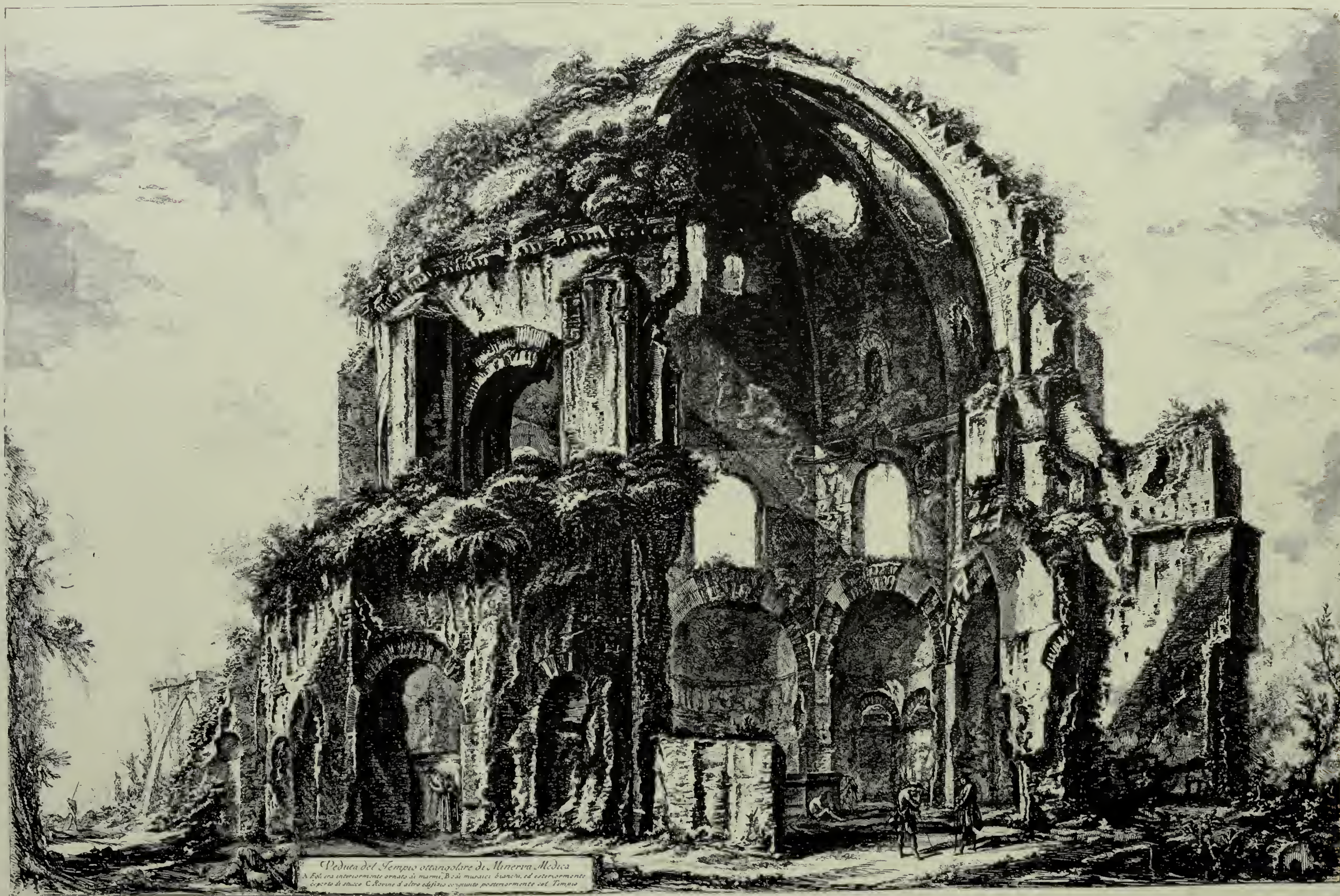
PLATE ILLUSTRATIONS

FROM WORK BY

BLISS & FAVILLE; FREDERICK JUNIUS STERNER; GEORGE T. TILDEN.

LETTERPRESS



VIEW OF THE RUINS KNOWN AS THE TEMPLE OF MINERVA MEDICA.

GIOVANNI BATTISTA PIRANESI, DEL.

This structure consists of a large ten-sided hall, 27 yards in diameter, covered by a cupola 90 feet high, with four surrounding apartments. On nine sides of the interior are niches for statues, several of which have been found; the entrance passed through the tenth niche. Above the niches are roundheaded windows. The roof was of vaulted brickwork, the pavement of porphyry, and the walls were ornamented with stucco and marble. The building probably formed the central feature of the pleasure grounds and baths of the Emperor Gallienus (died 268 A.D.) situated between the Porta San Lorenzo and the Porta Maggiore. The railway pierces the walls near the Porta Maggiore and part of the site of the old gardens is occupied by railway yards.

THE BRICKBUILDER

VOL. XIX. NO. 12. DECEMBER, 1910.

Hints on Architectural Acoustics.

Continued.

BY HUGH TALLANT.

PART III.

Illustrative Examples.

PART I of these papers outlined the theoretic principles of architectural acoustics. Part II showed how these principles could be turned to practical advantage. The third and final part will consider the treatment required by special types of construction. For this purpose it will be found convenient to adopt a classification according to size; and the fact that the direct sound can be readily understood to a distance of only 50 feet furnishes a natural standard of measure. On this basis every variety of auditorium may be assigned to one of three groups — those having no dimension exceeding 50 feet, those having only one dimension exceeding 50 feet, and those having two or all three dimensions in excess of 50 feet. The effect of differences in shape, material, contents and arrangement may then be discussed with reference to the group into which the auditorium in question happens to fall.

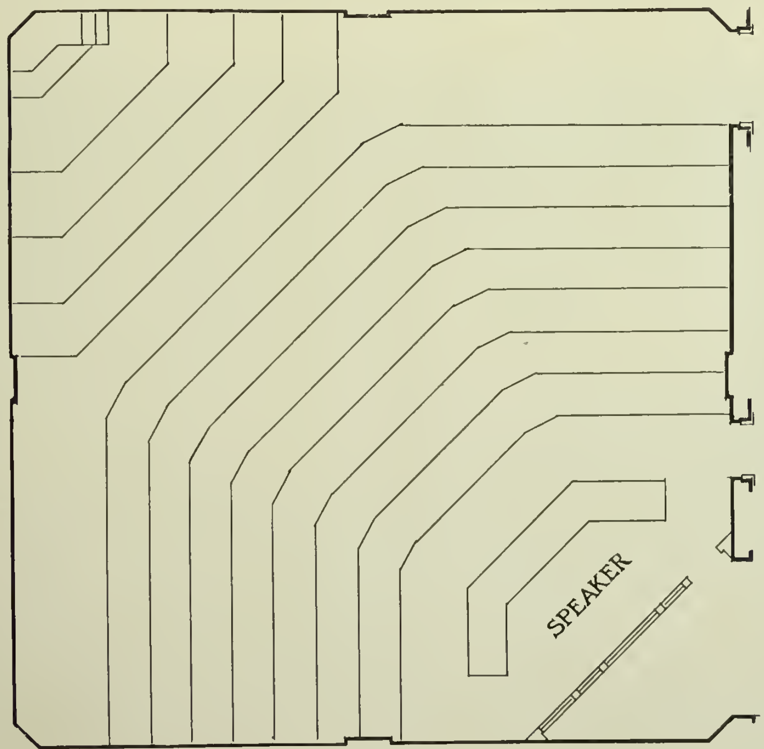


FIG. XLII.

Auditoriums Having no Dimension Over 50 Feet. Where no dimension exceeds 50 feet the audience is necessarily so near the speaker that the sound is always loud enough, and under ordinary conditions of material and construction the initial intensity is more than sufficient to drown out any serious defect of sound interference. The deflections occur with such rapidity as to forestall the possibility of interrupted reverberation or echo, and the acoustic problem is usually reduced to little more than an adjustment of materials and contents with reference to the desired amount of reverberation. As mentioned in a previous article the reverberation best adapted to musical purposes seems to increase from 1.00 second for a volume of 2,500 cubic feet to some 1.35 or 1.40 seconds for a volume of 30,000 cubic feet. For speaking purposes a slightly shorter reverberation is preferable, at any rate in small rooms. The methods of calculation and adjustment have already been fully illustrated * and need not be repeated here.

General arrangement is, however, of some importance even in a very small auditorium. The acoustics are almost always benefited by placing the speaker or musician on the short side of an oblong room and in the corner of a square one. Figs. 42, 43 and 44 give the floor plan, the ceiling plan and the general interior appearance of a small lecture hall arranged in

* See The Brickbuilder for November, 1910.

the latter way. This particular hall is about 47 feet square and contains 41,000 cubic feet. The wooden floor is uncarpeted, the seats are not upholstered, and there are no draperies except a screen for photographic projections. Under these conditions the absorbing capacity is mainly dependent upon the size of the audience. This hall was designed before the precise coefficients of absorption had been determined, but the danger of excessive reverberation was sufficiently evident without accurate calculation. To guard against this defect a number of heavy beams were furred across the ceiling for the purpose of deflecting the sound to the floor as quickly and repeatedly as possible. It was hoped in this way to minimize the reverberation when a portion of the seats was unoccupied, and in point of fact the desired result seems to have been attained, as a reduction in the size of the audience does not affect the acoustics so unfavorably as calculations would give reason to expect.

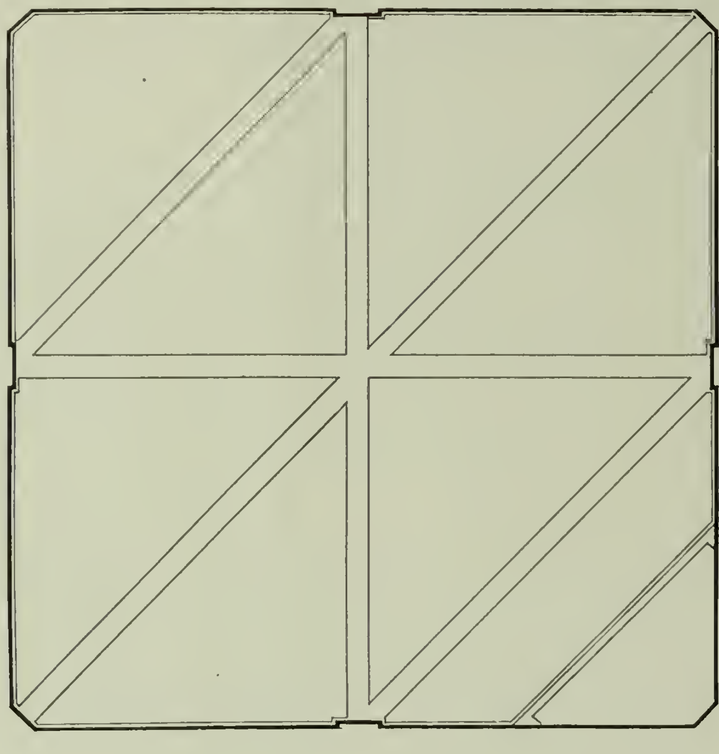


FIG. XLIII.

FIG. XLIV.

AUDITORIUMS HAVING ONLY ONE DIMENSION EXCEEDING 50 FEET. In auditoriums of this class it is usually preferable to place the rostrum at one end, thereby permitting a speaker or singer to command his audience more readily than from the center of one of the long sides. There is rarely any danger of insufficient loudness toward the rear, as auditoriums of this class seldom attain a length of 100 feet, and the direct sound is sufficiently reinforced by deflections from the walls and ceiling. For orchestral music this arrangement has the great advantage of reducing the number of front seats where the tones of the different instruments are apt to be imperfectly blended. Figs. 45 and 46 show the plan and longitudinal section of a typical auditorium of this class. As will be noted the floor at the rear is not quite high enough to prevent sound interference, and a false beam has therefore been contrived at B. The cross beams C were required by a special lighting scheme, but are a distinct detriment to the acoustics, as they interfere with the sound which would otherwise be deflected from the ceiling to the rear seats. They also have a tendency to create interference.

AUDITORIUMS HAVING TWO OR ALL THREE DIMENSIONS IN EXCESS OF 50 FEET. Auditoriums of this class not infrequently allow considerable latitude of architectural treatment, and in particular may vary largely in shape and proportion provided that the requisite seating capacity is maintained. Frequently the arrangement is dictated by considerations of sight rather than hearing. In a well designed house the audience should hear almost as well 100 feet from the stage or pulpit as in the front rows — better in a music hall or opera house — but at such a distance facial expression and many niceties of gesture are totally lost without a glass. There is accordingly an advantage in keeping a large auditorium as shallow as possible, provided always that the width is not so great as to prevent the speaker from readily commanding his audience. A megaphone-shaped auditorium may be extremely wide because the undesirable seats at A and B, Fig. 47, are eliminated. A rectangular auditorium, on the other hand, must be kept relatively narrow because otherwise the speaker is obliged to turn continually to right and left in order to address the occupants of the side seats. This defect is of course less noticeable in the case of a music hall, but most auditoriums are called upon to serve a variety of purposes and must be designed for speaking, or at any rate singing, as well as for instrumental music.

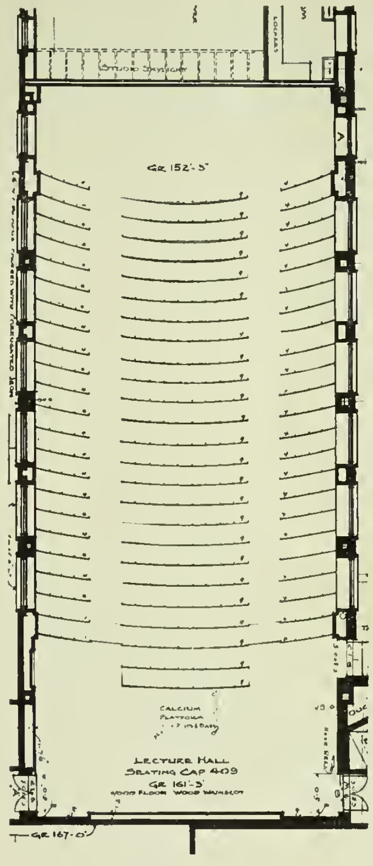


FIG. XLV.

Elliptical shapes are to be avoided in auditoriums of any size because they have a tendency to concentrate the sound in the vicinity of the foci to the detriment of other points. The effect is particularly accentuated where both floor and ceiling are horizontal or where the ceiling is an ellipsoid of which the speaker may occupy a focus. Fig. 48 represents the plan of such an auditorium, the speaker being placed at the focus S and the hearer at the other focus A. As the radii vectores to any point make equal angles with the tangent, it follows that the path of any sound of the speaker's voice will be projected in such a line as S b A c S d A e S, etc. That is, the walls deflect every sound alternately through two vertical lines erected at S and A, and thus concentrate as much sound in the vicinity of the two foci as is scattered over the entire wall surface. The results are sometimes startling. In the old Mormon Temple at Salt Lake City such conditions produce a remarkable whispering gallery. In smaller auditoriums the effect is less pronounced, but is always disagreeable. A particularly unfortunate instance is the ordinary semi-circular lecture hall, Fig. 49. Here the center of the circle takes the place of both foci of the ellipse, and the unfortunate speaker, relegated to this location, finds himself literally pelted by the deflected sounds of his own voice. This type of auditorium has many other drawbacks. The rear wall is extended to a maximum involving a corresponding danger of sound interference, while the absence of side walls eliminates the deflections which can usually be counted upon as the best reinforcement of the direct sound. Moreover the number of sounds concentrated at any given point is so few as very largely to increase the chances of interrupted reverberation, and altogether the acoustic conditions, which are naturally so favorable in the open hemicycle, are completely vitiated by the addition of a roof.

The best examples of a large auditorium designed in accordance with the suggestions of the preceding articles is the opera house of the Brooklyn Academy of Music. This auditorium is about 90 feet wide, over 100 feet deep on the balcony level, and averages 50 feet high in the clear. The volume is 432,000 cubic feet, exclusive of staircases and similar accessories; the seating capacity 2,200; the calculated reverberation 1.6 seconds; and the area of exposed woodwork about 7,500 square feet exclusive of the stage floor. Figs. 50 and 51 are reproduced from the working drawings of the main floor plan and longitudinal section, while Fig. 52 shows the general architectural treatment of proscenium and boxes. The megaphone surfaces were studied with scrupulous pains, and the result has been to develop a somewhat unique "center of distribution" extending from the middle of the footlights some 15 or 20 feet in either direction. The distribution of the sound is still satisfactory from points further back on the stage and also from the orchestra pit, but becomes defective in the vicinity of the first row of seats, as was demonstrated to much sorrow on one occasion when the stage was temporarily extended out into the auditorium. Of course this result is only what might naturally be expected, as the center of distribution, being necessarily of limited area, was carefully located under the proscenium arch where it would be of most service.

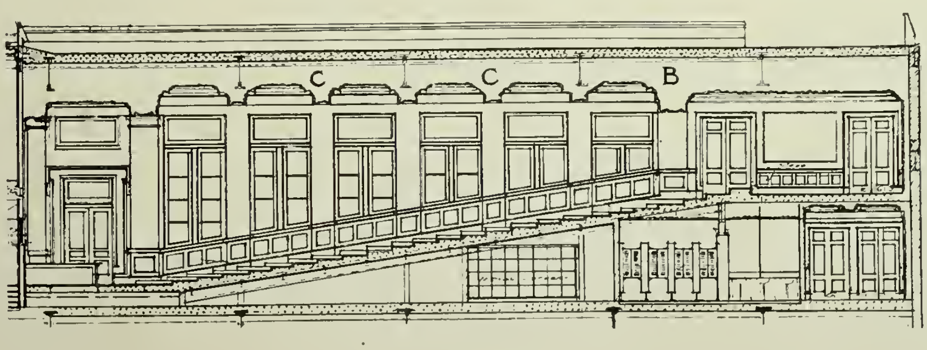


FIG. XLVI.

The rear of the house was designed with equal attention to detail. As will be seen from the section, the first sound escaping above the gallery gods meets the ceiling before it can reach the rear wall. All sounds deflected from this portion of the rear wall are therefore forced to strike the carpet before they can return to cause sound interference. The first balcony is similarly protected by a high barrel vault, and the main floor by a series of arcades which were originally fitted with draperies above the impost. The distinctness resulting from these precautions is almost uncanny. On the occasion of certain semi-religious services, the benedictions whispered on the stage could be readily understood under the extreme rear of the second balcony at a distance of over 100 feet.

The calculations for timbre were based upon the conditions existing in the New Amsterdam Theatre. It must be admitted that, at the time, this procedure was to some extent an experiment, because although the theater had given satisfaction for both drama and vaudeville, its quality of tone had never been tested by serious music. The conditions at the Brooklyn Academy have, however, met every demand. All in all, the results obtained in this case are so precisely along the lines of the methods employed as to furnish a reasonable presumption in favor of the expedients advocated in these articles. They at least demonstrate the possibility of designing a large auditorium equally well adapted to every acoustic requirement.

CONCLUSION.

As stated at the outset, the object of these articles has been merely to suggest practical methods of getting at results. A certain amount of theory has of necessity found its way into the discussion by way of explanation, but no attempt has been made to develop anything in the nature of a scientific treatise. Before leaving the subject, however, one or two points of somewhat broader application may properly receive a passing notice, as indicating the direction in which a more complete analysis of the subject would be likely to lead.

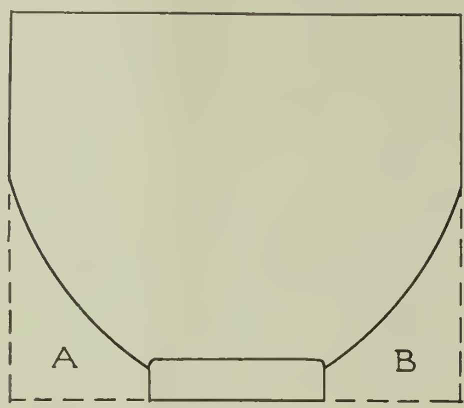


FIG. XLVII.

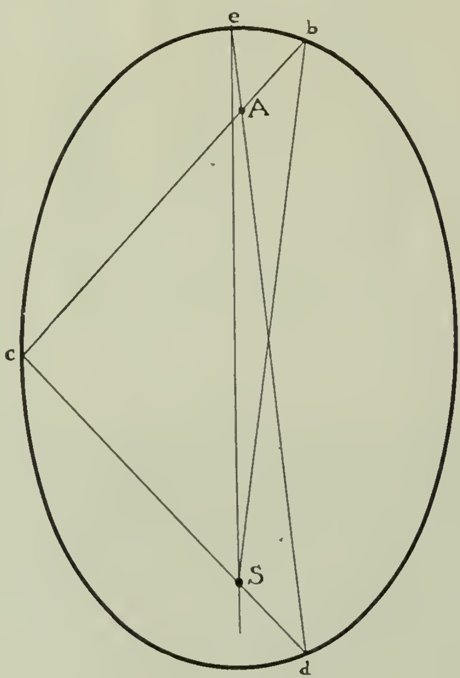


FIG. XLVIII.

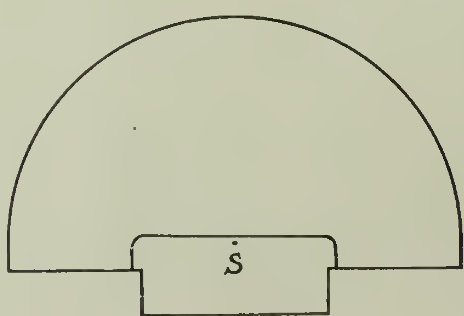


FIG. XLIX.

In the discussion of loudness no mention was made of the cumulative effect of reverberation. Evidently in the case of a loud and sustained note the reverberation produced by the beginning of the note is added to the total volume of sound toward the close. In an auditorium possessing a reverberation of upwards of 1.5 seconds, this increase or swell in the intensity of the sound is very perceptible. The phenomenon is perfectly familiar to powerful singers who depend upon it to accentuate and develop their most telling effects. A somewhat prolonged reverberation is therefore desirable in a hall devoted to music of a grandiose type. On the other hand the voice of the average vaudeville singer is not sufficient to derive any important support from accumulated reverberation, and as the words of a comic song must be readily understood, a much shorter reverberation is desirable for operetta.

In the discussion of distinctness the difficulties arising from interrupted reverberation were based upon an interval of $^1/_{15}$ of a second. This interval is very possibly too short, as the real cause of the difficulty may be due to the overlapping of one syllable upon the next, rather than to a repetition of sound. In rapid conversation the ordinary person pronounces about two hundred syllables a minute. Allowing for the pauses between phrases and sentences, and assuming that the consonants occupy about half of the remaining time, it can readily be shown that the vowel sounds average about $^1/_{10}$ of a second apiece, the shortest probably requiring no more than $^1/_{12}$ of a second. It is quite possible that interrupted reverberation should properly be based upon this interval of $^1/_{12}$ of a second rather than upon $^1/_{15}$ of a second. If this is the case the procedure recommended in the preceding articles, while a trifle too strict, really amounts to little more than allowing a slight factor of safety.

In the discussion of reverberation some mention was made of the influence of the shape of the auditorium. Probably with further investigation it will be found that the constant 0.052 in the formula $(A+X)\,T=0.052V$ must be varied to correspond with the type of auditorium in question. When a sound is first produced it is, of course, concentrated in the vicinity of its source. Its spread in the form of a spherical wave can be readily followed and the surfaces upon which it will strike first and most sharply can be seen at a glance. Even after two or three deflections the general movement can still be traced by the graphical methods already described. Soon, however, the conditions become too complicated for detailed comprehension, and after a space of time which rarely exceeds 1/4 of a second, the expansion of the sound-wave and the multiplicity of its deflections result in dispersing the sound almost equally throughout every portion of the entire auditorium. During the period of initial distribution the location of the absorbents is of distinct importance. Subsequently it is entirely immaterial. This means merely that the tendency towards an equal distribution of sound is much greater than the possibilities of unequal absorption. It follows

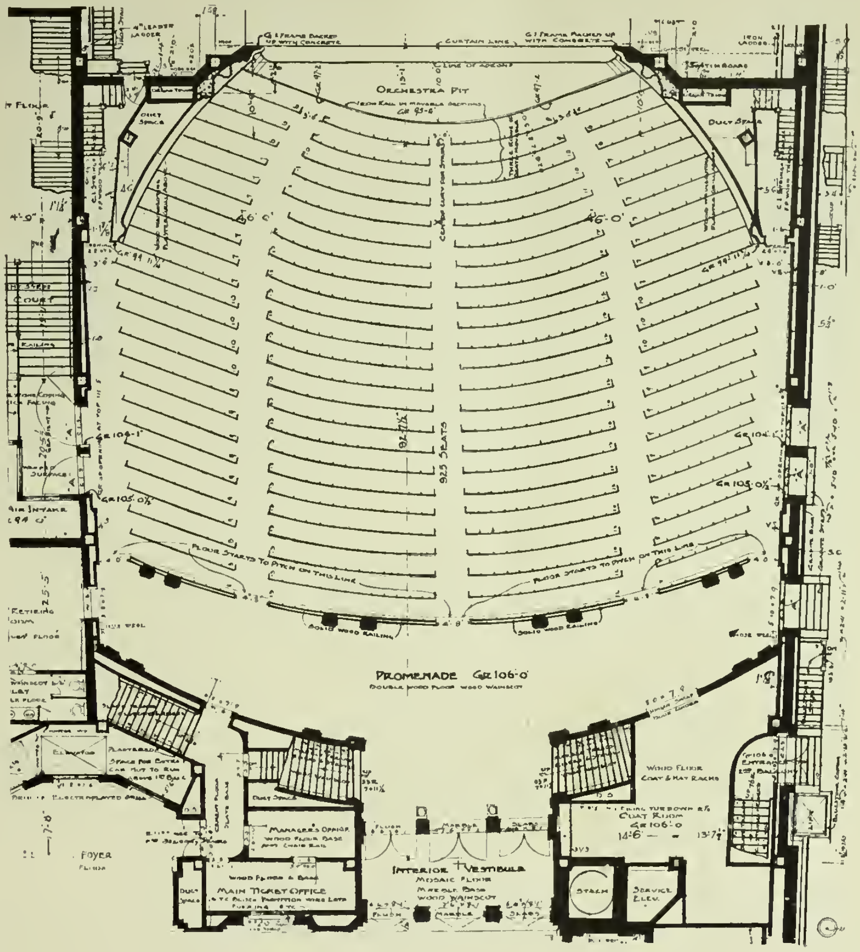


FIG. L.

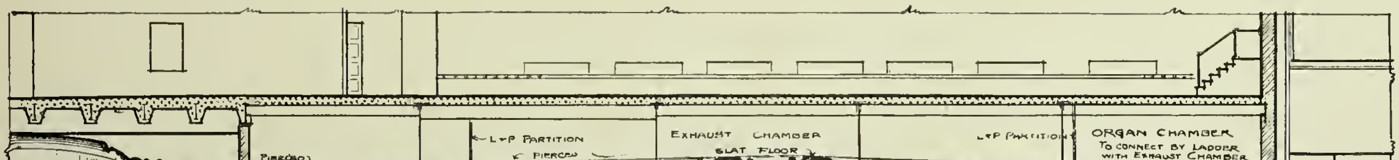


FIG. LI.

that the reverberation will remain audible for practically the same length of time in all parts of an auditorium, and after the first quarter of a second will die away at exactly the same rate no matter where the absorbents are placed.

Under ordinary conditions, and in particular whenever the front of the auditorium is rectangular, the sound is absorbed at approximately the same rate during the initial distribution and during the subsequent period of audibility. In such cases the length of the reverberation can be accurately computed from the formula $(A+X)\ T = 0.052V$. Where, however, all sound is immediately concentrated upon an absorbing surface there is reason for believing that the reverberation is materially diminished. This is precisely what takes place in an auditorium of the megaphone type. Here every part of the sound-wave is almost immediately directed against the rear wall, where every possible contrivance has been prepared for its absorption. As will be seen by Fig. 53, unless the dimensions are extremely great, the longest sound-path S B C D A cannot be much over 100 feet longer than the direct path S A; so that if the rear wall were a perfect absorbent all sound would be destroyed within the first tenth of a second and there would be no reverberation worth mentioning. Of course in practice some little sound is necessarily deflected from the balcony fronts, some from the rear wall surfaces, and a trifle from even the audience, but the total amount is so small that it seems probable that in a megaphone shaped auditorium the reverberation is materially less than calculation based on the coefficient 0.052 would indicate. If this is the fact, it would indicate that where the sound is carefully distributed throughout an auditorium, an actual reverberation of even less than 1.6 seconds will give satisfactory musical quality in an auditorium of 400,000 cubic feet.

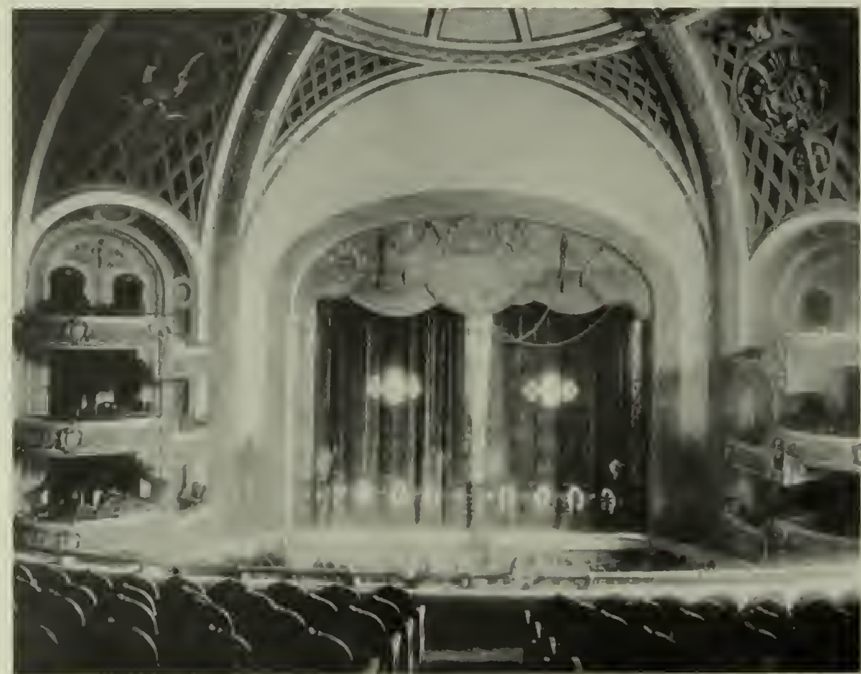


FIG. LII.

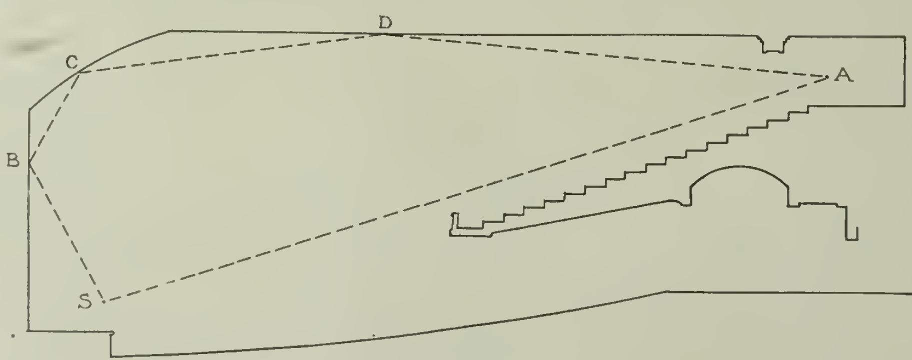


FIG. LIII.

Another phenomenon which has not yet been carefully investigated is the relative effect of reverberation in different parts of the same auditorium. As just explained the duration of reverberation is everywhere the same. On the other hand the initial intensity varies enormously with proximity to the speaker. Evidently the relation of reverberation to initial intensity varies correspondingly in different parts of the same auditorium, the reverberation being relatively greatest where the intensity is least. Nevertheless in auditoriums where the reverberation is insufficient, the defect often seems most accentuated where the sound is faintest. This would seem to indicate that the ear accepts volume of sound to some extent as a substitute for quality. If this inference is correct it may explain the large amount of reverberation required to give quality of tone in a large auditorium, particularly at points where, owing to the great distance between musicians and audience, the intensity of the sound is relatively small. These and other similar speculations will doubtless lead in time to conclusions of much practical value. In the meantime, it is hoped that the suggestions which have been offered may prove of service, at least to the extent of obviating the most serious of the acoustic defects which are to be met with in so many of our finest buildings. Even if nothing further is accomplished, a long-suffering public has become so thoroughly inured to the worst of acoustic conditions that scant mediocrity is apt to be hailed as a triumph.

Authorities cited in the preceding articles :
Barker, "Physics," Advanced Course.
"Encyclopædia Britannica," Vol. XXIII., pages 222 and 223.
Rice, "What is Music?"
Sabine, "Architectural Acoustics."
Vitruvius, V. 4 and 5.
The reader is also referred to "The Theory of Sound in its Relation to Music," by Professor Pietro Blaserna.

Burnt Clay's Share in the Rebuilding of San Francisco.

III. Public and Semi-Public Buildings.

BY WILLIAM C. HAYS.

IF MY two previous papers were devoted entirely to private or business enterprises, it is not to be inferred that public work was being neglected. The city faced a serious situation for there were miles of streets to repave, and sewers and other service installations to be repaired or in most cases rebuilt. Car tracks and conduits too had to be relaid by the public service corporations, so that work was held back in the re-grading and re-surfacing of streets.

But there was not much delay in planning for the new municipal buildings. A new clean city government had come to take the place of an old and, apparently, corrupt one. At its head was Edward Robeson Taylor, Dean of the Hastings College of Law, of the University of California. And with him there served two able and distinguished men in the office of city architect. This municipal work, then, was in good hands during the administration of Newton J. Tharp and after Tharp's death, of Loring P. Rixford. Both of these trained men put at the command of the city loyal, efficient service, and designed buildings second to none in America for their purposes. But history repeats itself; as in Boston and Chicago, so it has been in San Francisco — and so it perhaps always will be while Boards of Works have unlimited authority over city architects. The man of ability and integrity is sooner or later bound to clash with ignorance and too often with less excusable faults. Mr. Rixford disagreed with the Board of Works and soon, it seems, the city architect's office fell into devious ways, so that it became less than a negligible institution. It needs desperate remedies, perhaps an emetic.

DETAIL, HANCOCK GRAMMAR SCHOOL.
Newton J. Tharp and Loring P. Rixford, City Architects.

The most urgent of the municipal buildings were the schoolhouses, fire stations and hospitals, and the city architect's office, in its palmy days, did noteworthy examples of all classes. The school which is most striking in plan and scheme is built of concrete, and being therefore frowned upon by an intolerant "brick-and-terra-cotta" editor, the school is dismissed. But those which are most interesting in execution — the Hancock and the Mission Grammar Schools, are both burnt clay jobs as are the Washington and the (unfinished) Denman School, while the Sutro and McCoppin are composite construction, the lower story in each being brick.

The Hancock School was planned during Mr. Tharp's administration as city architect and executed under Mr. Rixford. In the exuberant quality of the ornate terra cotta balconies, and in the composition of its rich cornice and pierced parapet there is admirable detail. The walls are selected common red bricks, of deep color, rich in variety. A fine study in simple straight line pattern is seen framing the grouped and mullioned windows of the class rooms. The terra cotta is buff, standard finish. This school is on a steep sloping street and has an uncommon arrangement of approach, by a long bridge from sidewalk to main entrance, crossing over part of the play yard, the yard being reached directly from the sidewalk on the downhill end of the lot.

The Mission Grammar School was started during the incumbency of Mr. Tharp, whose sudden death occurred soon after the building was begun. It is of light gray brick, with terra cotta trimmings to match. Unlike all the other new schoolhouses in the city, it has a low mansard roof.

Several fire stations have been constructed, of which two are within our province. They are the house for Truck No. 10 on Sacramento street near Walnut and that of Engine No. 41 on Leavenworth street between Clay and Washington. The former is uninspiring; it is as stupid as the latter is engaging and naive. I do not know a more perplexing little façade than this — shouting defiance at canons of design, it is bad in proportions (for the demands of lot width and story height seem to have made it so). But a clever hand has given to it wall texture, color, and craftsmanship so beautiful, added to an effect of light and shadow so well studied, that one does not think of proportion until he is so biased that his principles are waived. Like many of the old things abroad, violating half the supposed "rules" of composition, the result may be the masterpiece.

Mr. Rixford, I believe, carried out this charming little front. He must have had the hearty co-operation of terra cotta and tile makers and setters. The bricks are moderately rough, wire cut, of a considerable range of color; the terra cotta is slightly lighter, while the diaper pattern filling the gable over the windows, and the accents under the cornice, are varied from intense greenish blues, through shades of purples, browns and reds. This station, like the Sacramento street building, is the last word in fire-house construction and equipment.

MISSION GRAMMAR SCHOOL.
Newton J. Tharp and Loring P. Rixford, City Architects.

The Municipal Hospital, unfortunately, is not far enough advanced in construction to be photographed — nor is the Denman School, both of which give promise of being successful, if their execution is put under capable sympathetic hands. These are both to be studies in brick, terra cotta and tiles with, I understand, a generous use of colored inlays.

The mention of Tharp's and Rixford's Municipal Hospital plans brings me to express regret that the Children's Hospital (by Bliss & Faville) is not further advanced. There is a stunning main entrance, which will be back under an arcade, after the façade is all up. Here, as in the Newhall Building of Hobart's, we find sculpture — not merely modeling. The same feeling that marks Mora's other work is here, especially in the tympanum over the door: there is a calling up in the mind of the day when one stood in humility before his first real Della Robbia. This entrance is the most successful polychrome yet made; it marks the Coast's present state of advancement in a new-old art which must surely count for much in the architecture of the future. In addition to the entrance there will be glazed and polychrome terra cotta in the belt courses and cornice of this new hospital — and the walls are of specially made wire-cut bricks, very rough, with a full range of color in the light clays.

ENGINE HOUSE NO. 41.
Loring P. Rixford, City Architect.

Meanwhile additions are being, or have been, made to the German and some of the other hospitals, and several entirely new ones are contemplated or under way. Brick and terra cotta are important factors in the construction and decoration of these buildings.

San Francisco — the (so the "Union Labor" Mayor McCarthy calls it) "Paris of America" — could never have contented itself long with merely serious matters, like business buildings, houses and hotels, schools and hospitals. Cafés, restaurants, theaters, clubs — these had almost all been wiped out — but had not long to wait their turn for restoration in the city's gay life.

Of the clubs, all but the

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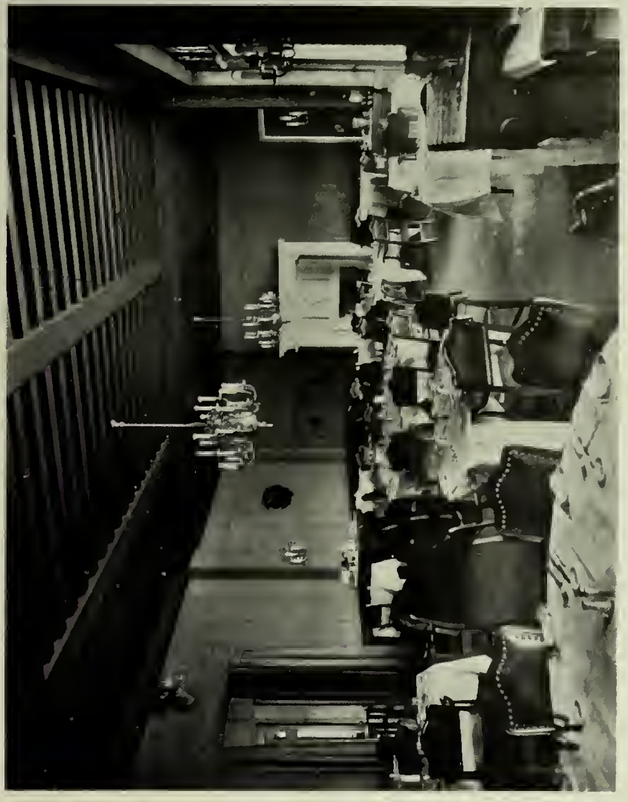


DINING ROOM.

LOUNGING ROOM.

DETAIL OF ENTRANCE.

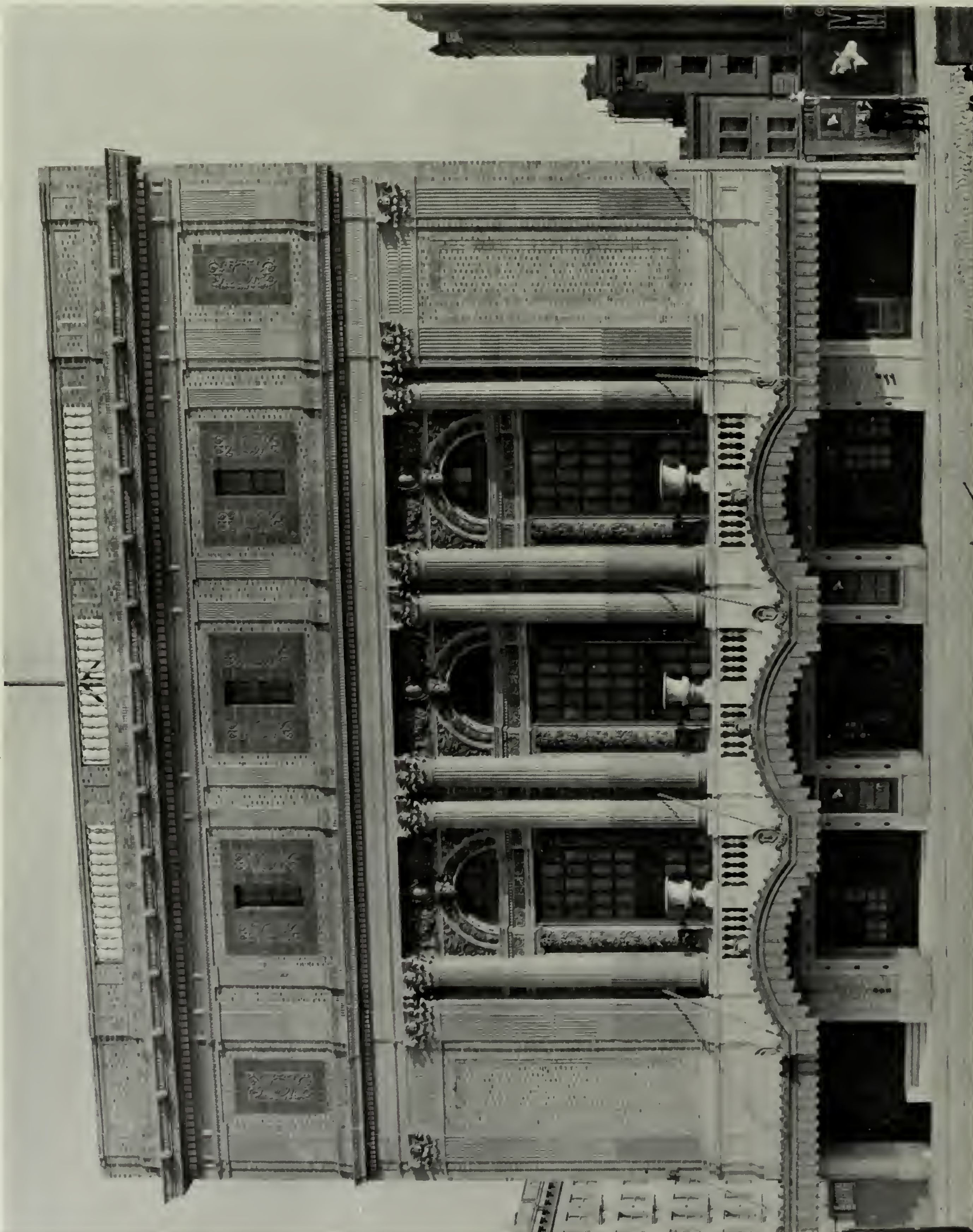
UNIVERSITY CLUB, SAN FRANCISCO, CAL.
Bliss & Faville, Architects.

THE PROSCENIUM.

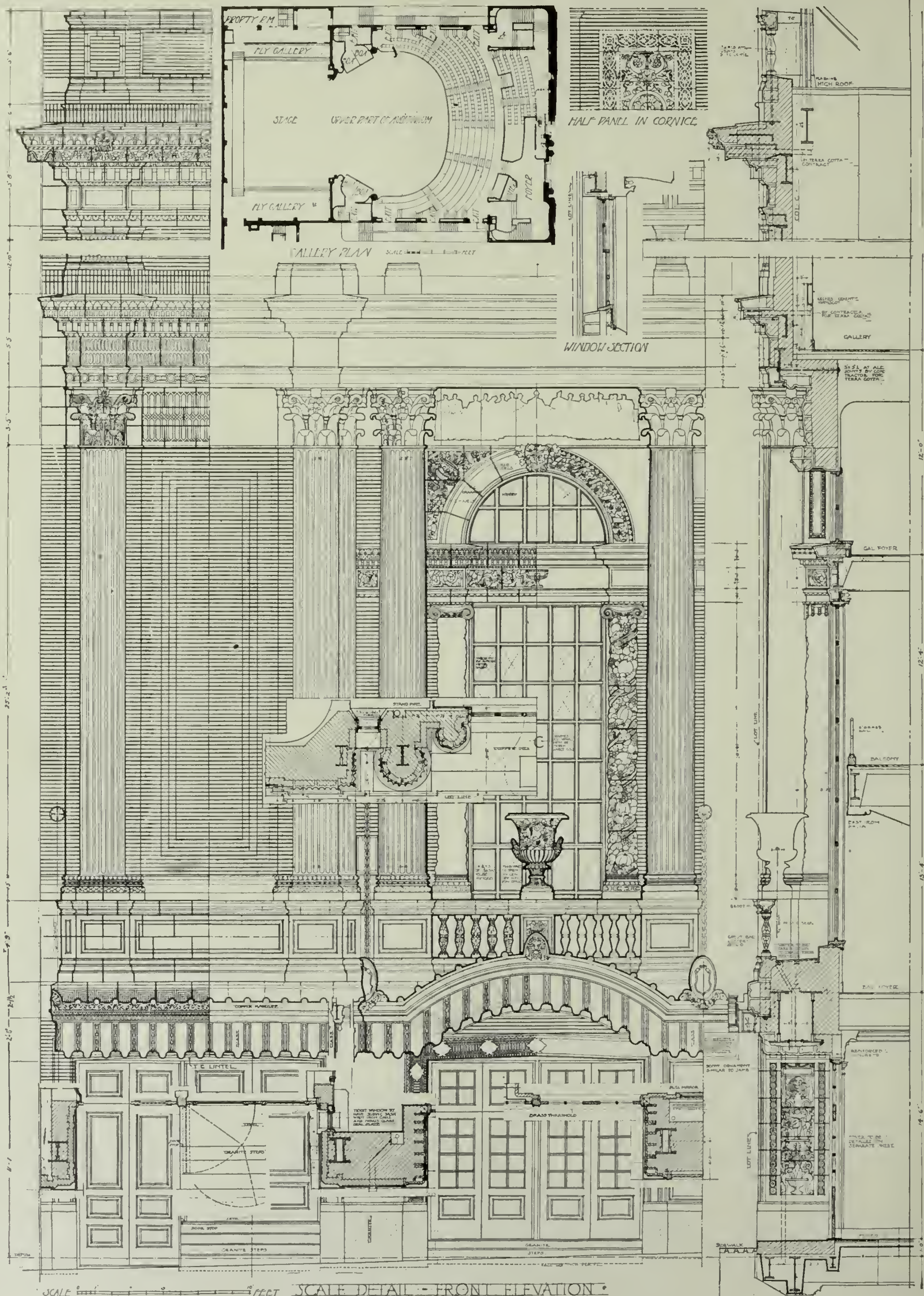
INTERIOR OF FOYER.

DETAIL OF ENTRANCES.

COLUMBIA THEATRE, SAN FRANCISCO, CAL.
Bliss & Faville, Architects.

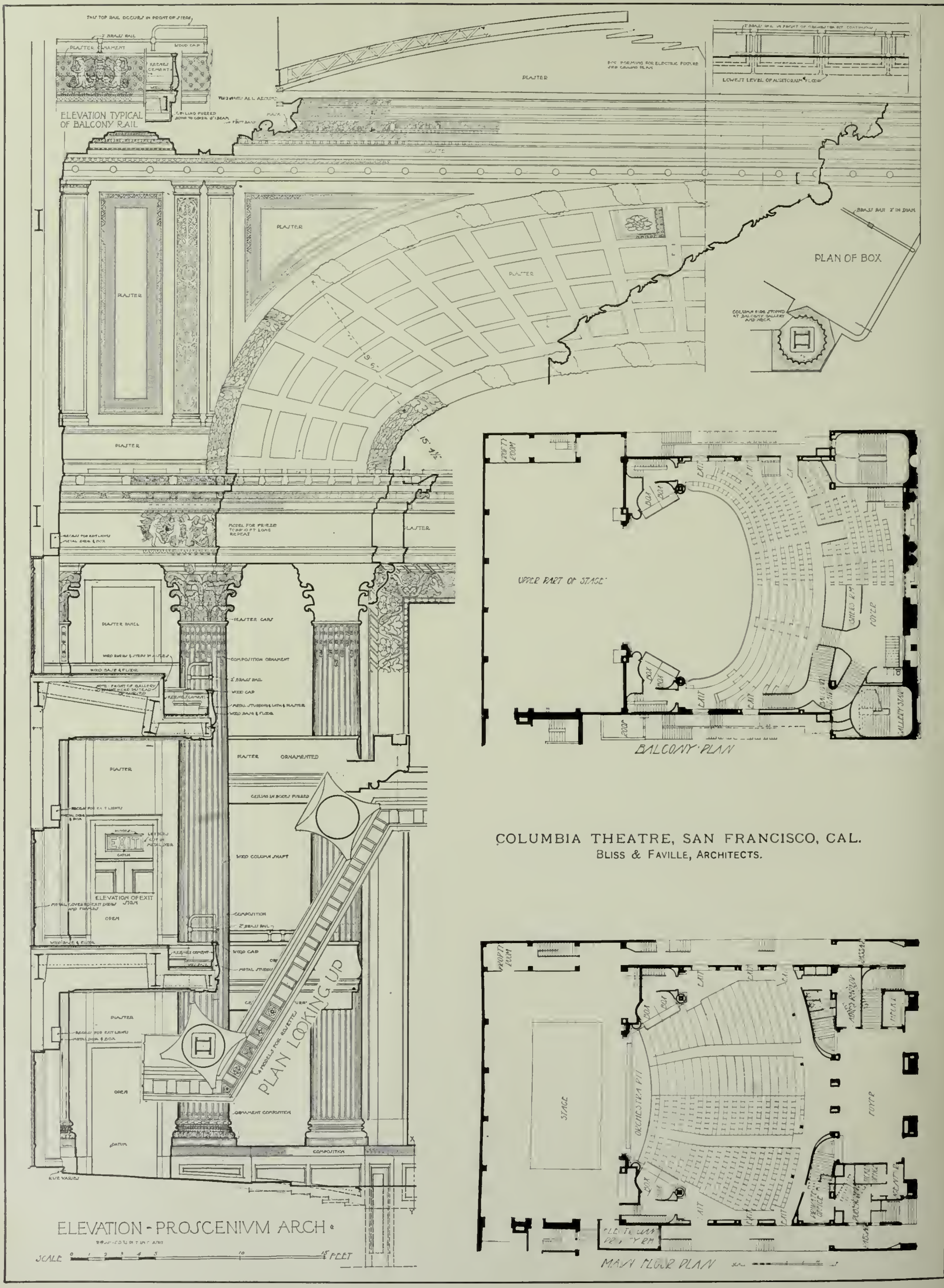


COLUMBIA THEATRE, SAN FRANCISCO, CAL.
BLISS & FAVILLE, ARCHITECTS.



COLUMBIA THEATRE, SAN FRANCISCO, CAL.

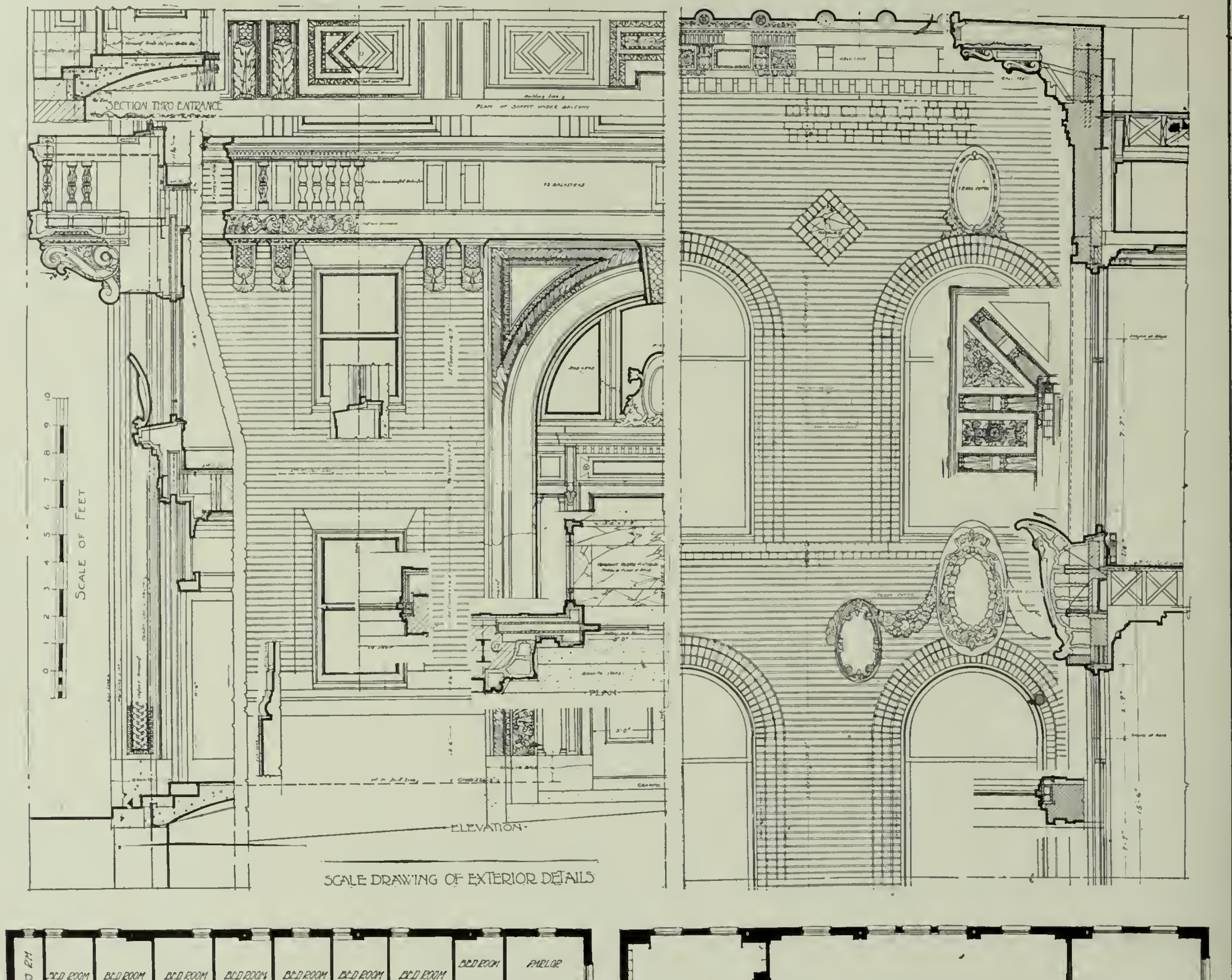
BLISS & FAVILLE, ARCHITECTS.



COLUMBIA THEATRE, SAN FRANCISCO, CAL.
BLISS & FAVILLE, ARCHITECTS.

UNIVERSITY CLUB, SAN FRANCISCO, CAL.

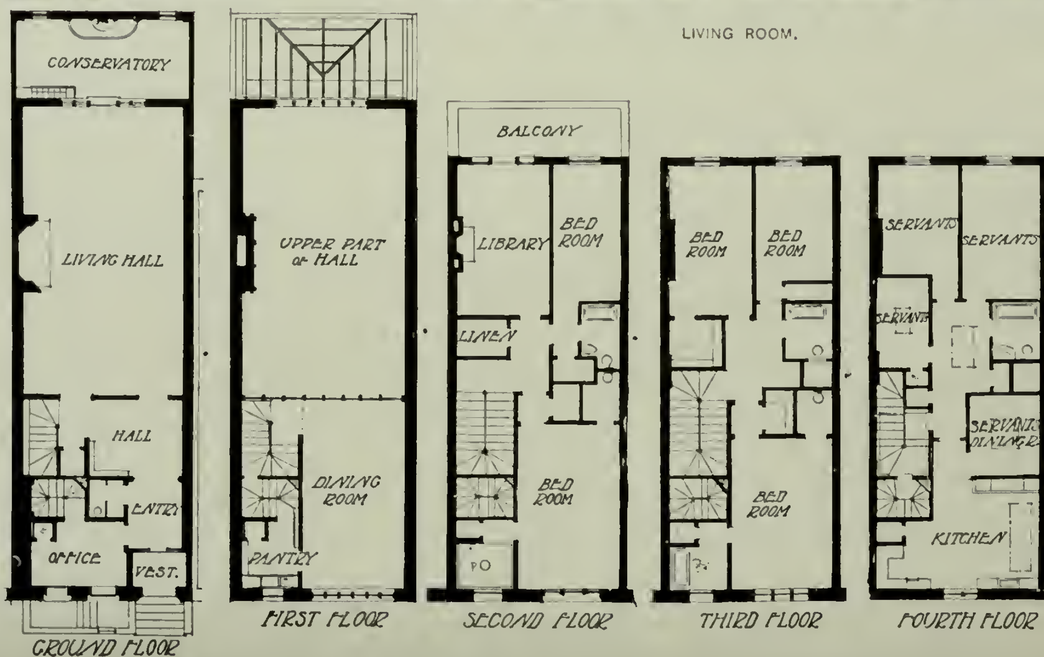
Bliss & Faville, Architects.



UNIVERSITY CLUB, SAN FRANCISCO, CAL.
BLISS & FAVILLE, ARCHITECTS.

HOUSE AT 135 EAST 19TH STREET, NEW YORK CITY.
FREDERICK JUNIUS STERNER, ARCHITECT.

LIVING ROOM.

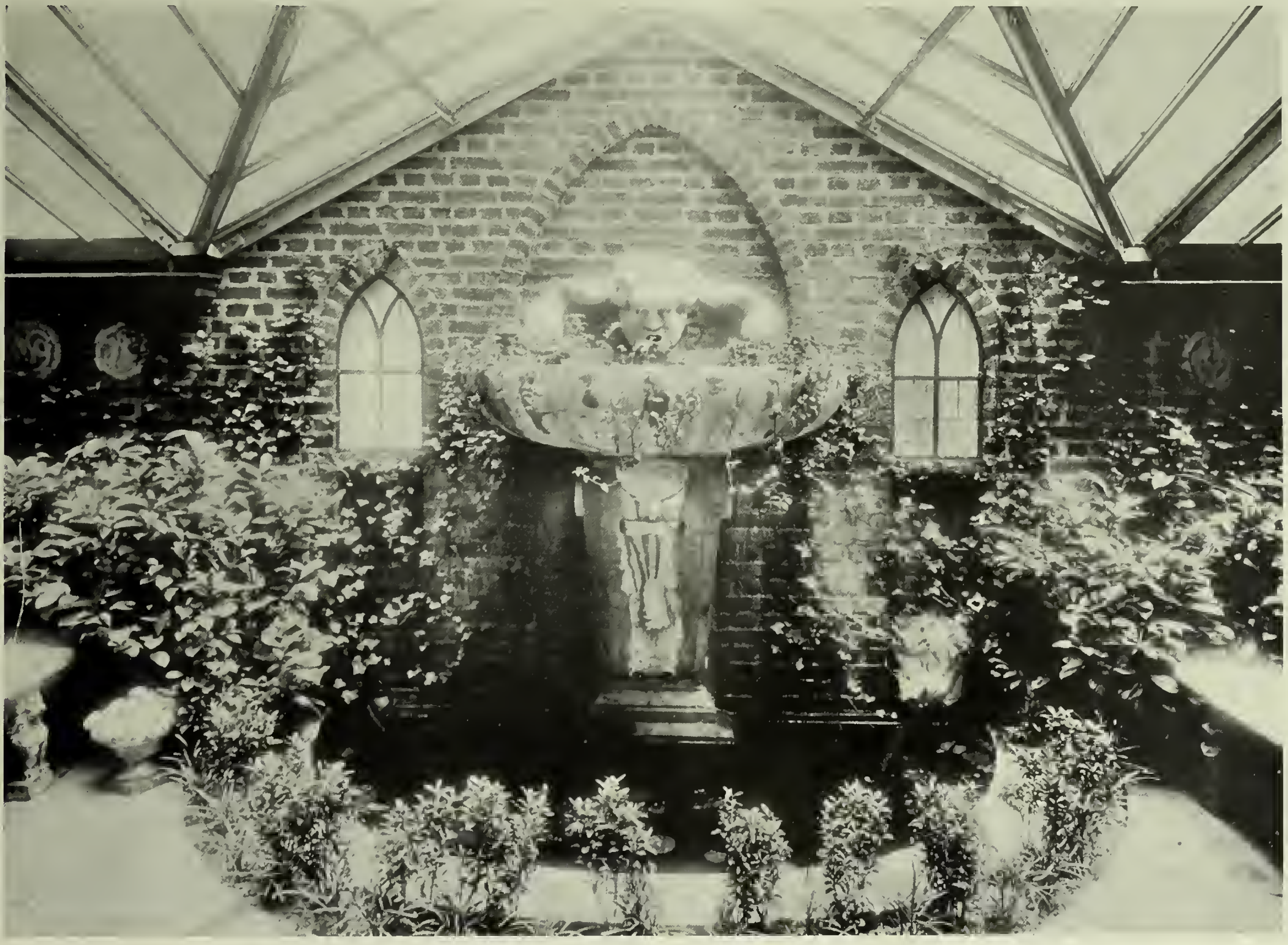


LIBRARY.

DINING ROOM.

HOUSE AT 135 EAST 19TH STREET, NEW YORK CITY.

FREDERICK JUNIUS STERNER, ARCHITECT.

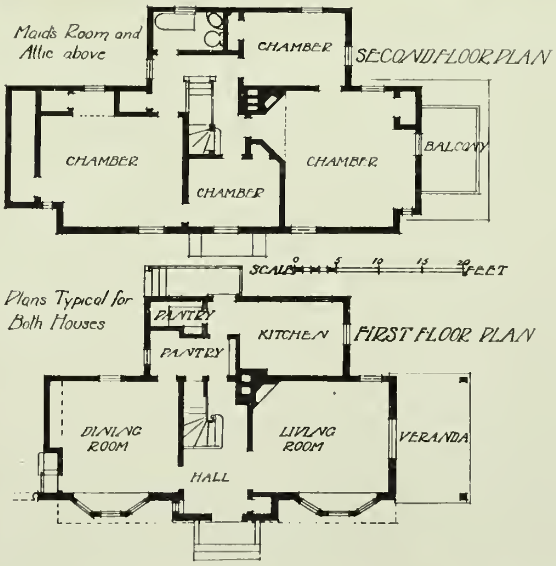


CONSERVATORY.

WINE CELLAR.

HOUSE AT 135 EAST 19TH STREET, NEW YORK CITY.

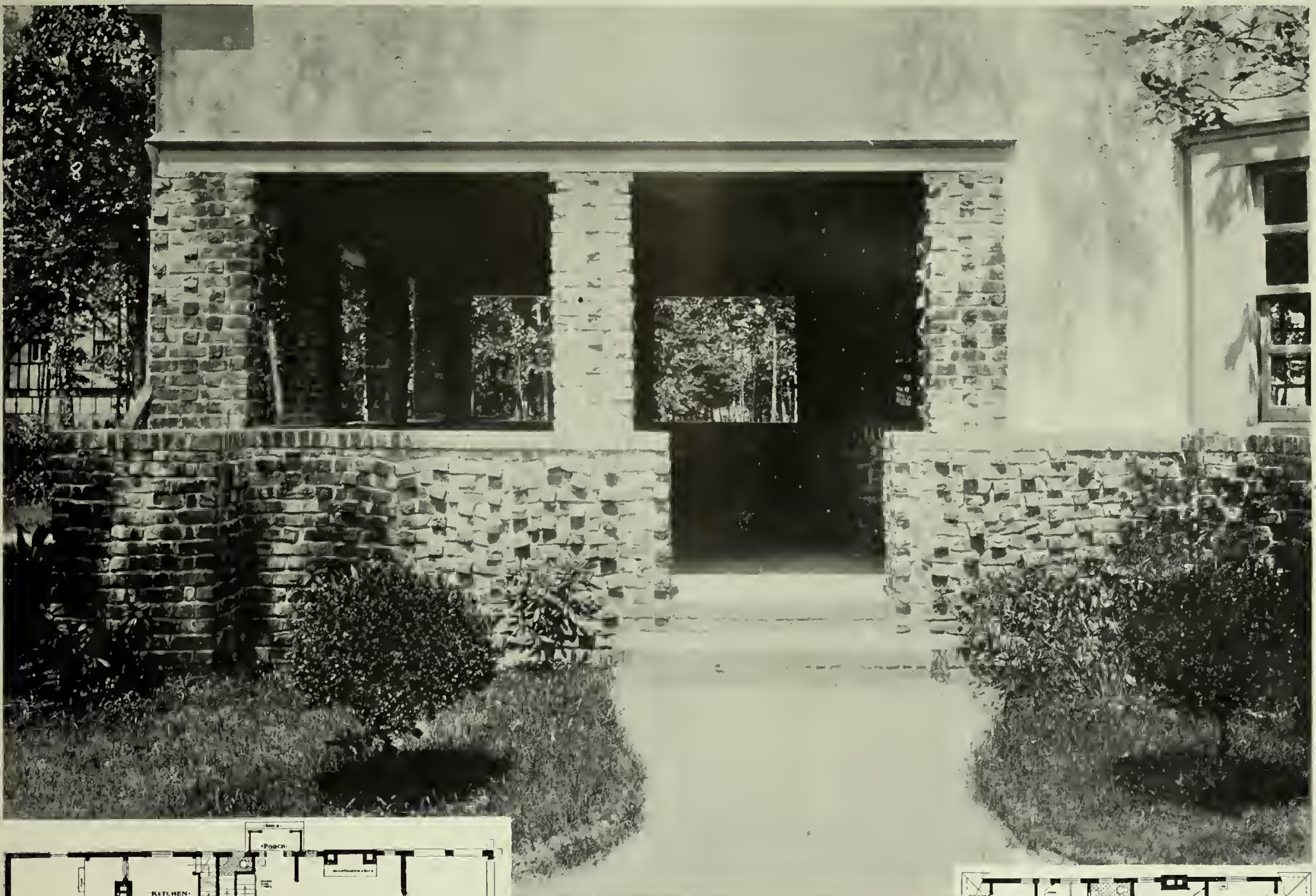
FREDERICK JUNIUS STERNER, ARCHITECT.



HOUSE AT MILTON, MASS.
GEORGE T. TILDEN, ARCHITECT.

HOUSE AT BELLE TERRE, LONG ISLAND, N. Y.
FREDERICK JUNIUS STERNER, ARCHITECT.

VOL. 19, NO. 12. PLATE 167.

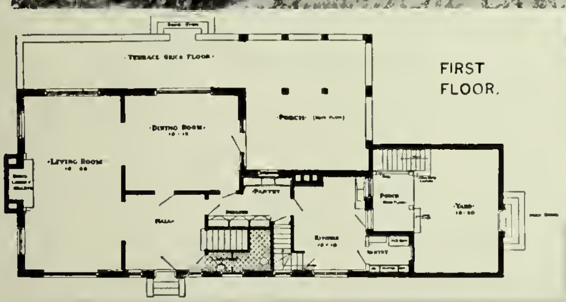


FIRST FLOOR.

HOUSE AT BELLE TERRE,
LONG ISLAND, N. Y.

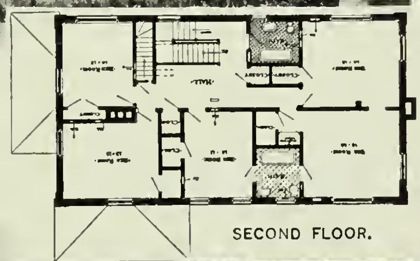
FREDERICK JUNIUS STERNER, ARCHITECT.

SECOND FLOOR.



FIRST FLOOR.

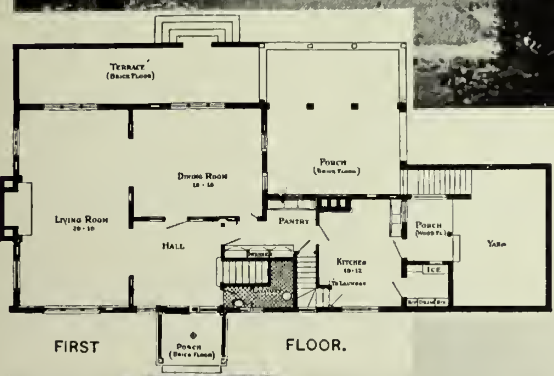
HOUSE AT BELLE TERRE,
LONG ISLAND, N. Y.
FREDERICK JUNIUS STERNER,
ARCHITECT



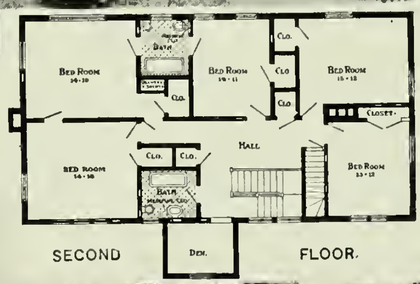
SECOND FLOOR.

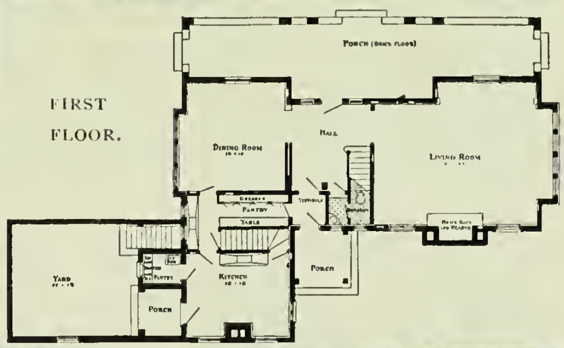
HOUSE AT BELLE TERRE, LONG ISLAND, N. Y.

FREDERICK JUNIUS STERNER, ARCHITECT.



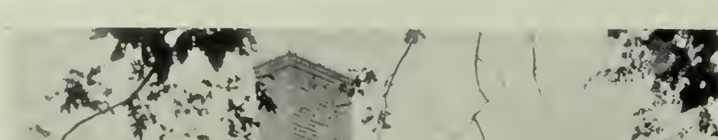
HOUSE AT BELLE TERRE
LONG ISLAND, N. Y.
FREDERICK JUNIUS STERNER,
ARCHITECT.





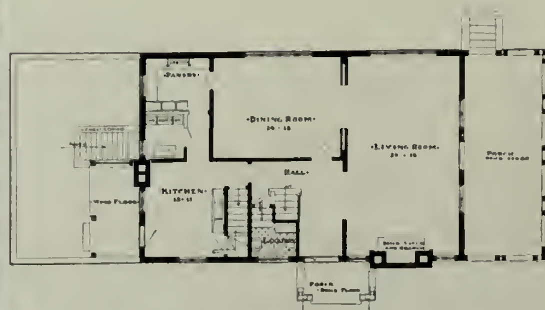
HOUSE AT BELLE TERRE, LONG ISLAND, N. Y.

Frederick Junius Sterner, Architect.



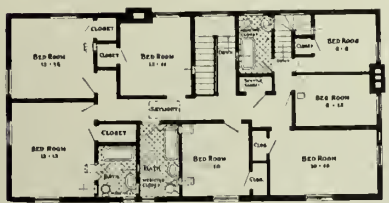
HOUSE AT BELLE TERRE,
LONG ISLAND, N. Y.
Frederick Junius Sterner,
Architect.

SECOND FLOOR PLAN.

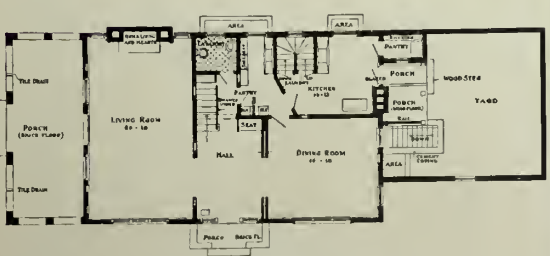


FIRST FLOOR PLAN.

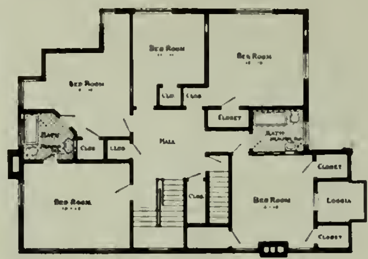
HOUSE AT BELLE TERRE,
LONG ISLAND, N. Y.
Frederick Junius Sterner,
Architect.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.



SECOND FLOOR.

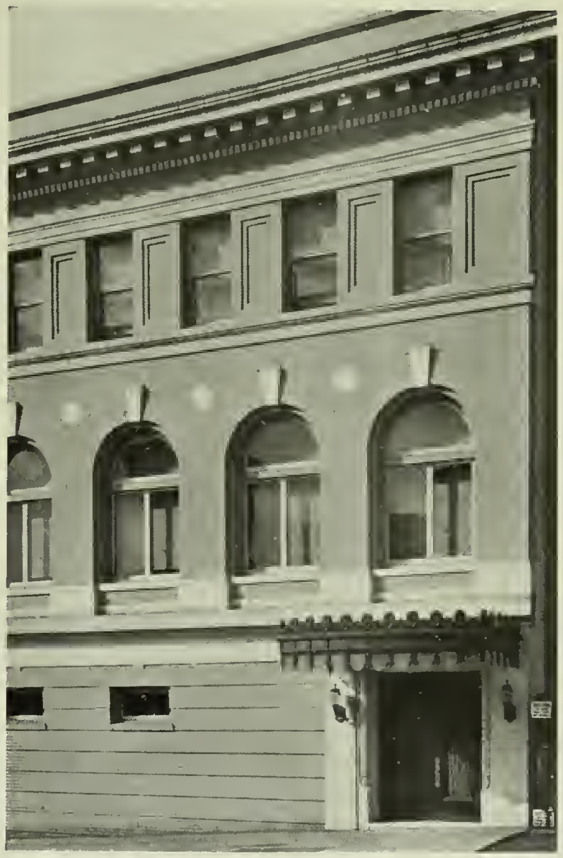
FIRST FLOOR.

HOUSE AT BELLE TERRE, LONG ISLAND, N. Y.

Frederick Junius Sterner, Architect.

Cosmos and the Women's "Century" found themselves homeless. That condition did not last very long; some are already in their new homes. The Pacific Union Club will soon take possession of superb quarters up on Nob Hill, opposite the west front of the Fairmont Hotel. There the red sandstone shell of the old Flood Mansion has been restored and extended by D. H. Burnham & Co under the personal care of Willis Polk; it is to have an interior such as to class it among the best club buildings in this country. But those clubs, building entirely new houses, have all elected brick and terra cotta for theirs and many of these are already occupied.

Let us defer to the ladies: they were the first, and down on Union Square is the trim little building of the "Town and Country," convenient to the shopping district, for a resting place of the women who are its members. It is of red brick with white marble trimmings; on the ground floor is a bookshop and, taking it all in all, it is Walnut street transplanted, and means homesickness, surely, for the passing easterner.



ENTRANCE TO THE ARGONAUT CLUB.
Sylvain Schnaittacher, Architect.

Diagonally across the square, at the corner of Powell and Post streets, is the Argonaut Club, by Sylvain Schnaittacher, and not far off is Dutton's Union League Club; somewhat alike these are in general scheme, both having stores in the ground floor with the club quarters above. On Post street too, are the most famous of all San Francisco clubs, the Bohemian and Olympic. The latter is still a hole in the ground, but it is expected that a handsome brick and terra cotta building will be going up soon, from the plans of Paff & Baur.

The Bohemian, on the other hand, is nearing completion — and will be occupied before the end of the year. It was originally planned by Loring Rixford, who, on becoming city architect, asked Geo. W. Kelham to succeed him in carrying out the clubhouse scheme. The Bohemian is built of selected common red bricks with red terra cotta balconies, entrances, balustrades, belt courses and cornice; below the main cornice is a range of well studied panels of brick pattern. The house fronts on a steep sloping street and is unfortunately awkward in mass, seen from the upper end — an unavoidable defect due to the site, but atoned for by the nice proportion of the south front. The distinguishing feature of this house is its own theater — a very complete one, too — which no one who has ever visited San Francisco need be told is the "Jink's Room." Long before I had ever seen California a young Englishman (en route from San Francisco, home) lunched at the T Square Club, and discussed the Bohemians, who, so he told us, have "their Summer Jinks and Winter Jinks; their High Jinks and Low Jinks — and my word! the low jinks are very low indeed!" That was slanderous of the "low jinks," and of the others! there is perhaps no performance in America so memorable as the yearly "Summer Jinks," given out-of-doors among the fire-lit towering redwoods up in Bohemian Grove.

ENTRANCE TO THE FAMILY CLUB.
C. A. Meussdorffer, Architect.

It is a fine house to which the Bohemians are now planning an early home-coming. And this club, in conjunction with his other work at the Palace Hotel, justifies the grouping of Mr. Kelham with Mr. Hobart as happy acquisitions to the local architectural ranks, recruited as the direct result of the great fire.

Two other leading clubs are already in their permanent quarters. The "Family" stork is perched at Powell and Bush streets, where Mr. Meussdorffer has housed him and his legion progeny in the only pressed brick clubhouse in the city; it is trimmed with terra cotta and moulded cement.

The University Club fits! It fits its site; it suits the climate; it looks "The University Club." Totally unlike McKim's masterpiece on Fifth avenue, this building on Nob Hill has some evasive quality of the New York University Club that yet brings them into mind together. No other clubhouse here has the dignity of this mass, notwithstanding two are larger and much more expensive. Here, though one feels that the designers have freed themselves from the McKim influence, "M(i)ckimeni" they are no longer. (The term echoes from far-away Florence, from Edwin Dodge, some time of *l'ecole des Beaux Arts*, later of Boston, now of his "Sabine Farm.") In the eastern front Bliss & Faville have frankly thrown precedent to the dogs; those great voids are revolutionary. But from their plate glass windows and balconies spreads out a view of much beauty, looking over the roof tops of Chinatown and the lower city — across blue waters to the trans-bay cities and the Berkeley Hills.

From this very successful work of Bliss & Faville it is but a short distance down the hill, past their St. Francis Hotel, to that *tour-de-force*, the Columbia Theatre. The building is divided into two parts, the greater on Geary street, being the theater itself; the smaller wing, leading to Mason street, containing dressing rooms and the general service quarters for the stage.

The distinguishing feature of the Columbia is, of course, its polychrome façade. Both the brickwork and the terra cotta are alive in color—the bricks in warm buffs, the terra cotta in several buffs, browns, purples and blues. The soffits of cornice and upper belt course are most intense ultramarine — and the same color appears as background for the frieze above the Palladian arches as well as on the bells of the Corinthian capitals. The greatest color range is found, naturally, in the fruit and flower ornamentation of the smaller columns. The total suppression, by the way, of all constructive form in these columns, is a daring innovation that has caused some unfavorable criticism and not without a basis of reason. But whether one finds minor faults or not, the Columbia is a long, long advance over anything I know in theater design in the west — and it has served to point out the almost unlimited possibilities of this material whose uses we are beginning to rediscover after a lapse of five centuries.

The interior is direct in parti and successful in its carrying out; here, again, the loss of color in photography means the failure of the illustrations to really illustrate, for the interior decoration is admirable. As to conditions of sight and sound the building is ideal.

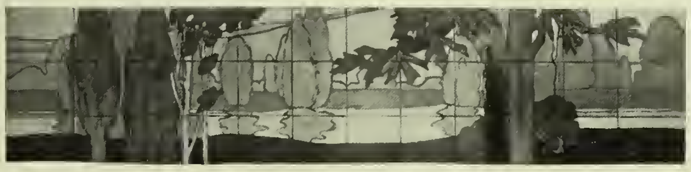
ORPHEUM THEATRE.
G. Albert Lansburgh, Architect.

Of the other permanent theaters in San Francisco little can be said, excepting of two, and one of these is not typically a theater. In John Galen Howard's theater for the Claus Spreckels Estate the Market street frontage is almost completely taken up with small shops, having all-glass fronts. The theater entrance alone is on this front, the auditorium itself being behind on a rear street. The white glazed terra cotta piers with their entablature are, however, exceptionally good examples of work in modeling, making and setting—it is one of the best in San Francisco. And in design this is all frankly terra cotta — which is not the case in Lansburgh & Joseph's "Orpheum" façade. The Orpheum, a cut-stone design, is executed in so clever an imitation of Colusa sandstone that one can hardly tell the real from counterfeit. It should be remembered, apropos of design, that this building is not to be judged by quite the same standards as is the more "legitimate" Columbia; it is frankly a vaudeville house. It was done, too, by a man of Gallic temperament—fresh from his studies in Paris: one fretting under the conventional—who deliberately set about producing the uncommon. If the composition has discrepancies in scale, it does not lack vigor. In a later work of Lansburgh's, the Elkan Gunst building referred to in my first article, he seems to have designed, in terra cotta, forms for execution in near-granite; his next step should bring him to a terra cotta design in honest unabashed burnt clay. And, after all is said, that is the besetting weakness of the bulk of the new work here — the failure to design terra cotta in its own forms, and, in lesser degree, to execute it undisguised. Perhaps these faults are not merely local in San Francisco.

Editorial Comment and Miscellany.

HOUSES AT BELLE TERRE, LONG ISLAND, N. Y.

A SECTION of the large estate known as Belle Terre, situated on Long Island, adjoining the village of Port Jefferson, is being improved with country houses costing from $12,000 to $15,000. The entire work of developing this estate in a practical and artistic manner has been entrusted to Frederick Junius Sterner, architect. In this issue of THE BRICKBUILDER are shown seven of these houses already finished, some of which are on the lines of the manor houses of England, while others have a more modern English treatment. Particular attention has been given to the materials used, so that not only has the form been preserved, but the color and texture of the brick, wood, plaster and other materials entering into the construction of these houses have been carefully considered. The gardens and as much garden wall, seats, dials, etc., as it was possible to introduce with the small amount of money expended have been arranged so as to bring into perfect harmony the buildings with their surrounding landscape. The fundamental principle upon which these houses were built was the use of more or less crude materials employed in a careful and workmanlike manner by skilled workmen who have taken a personal interest in the result of their efforts.

PANELS IN WALLS OF DINING ROOM, LINCOLN PARK REFECTORY, CHICAGO.
These panels were executed in colored faience by the Rookwood Pottery Company. In combination with Ironclay brick the walls are extremely rich in color and texture.
Perkins & Hamilton, Architects.

CARTOUCHE, CAPITOL CITY CLUB, ATLANTA.
Executed by Atlanta Terra Cotta Company.
Donn Barber, Architect.

A BRICK THAT FLOATS!

IN BUILDING cold storage warehouses, some parts of breweries, chemical laboratories and many other buildings where a low temperature must be maintained or where absolute freedom from dampness is necessary, the walls have to be insulated, and while the ordinary materials, brick, stone or concrete are used for structural purposes, there has also to be a lining of cork, hair felt, flax fiber, charcoal, sawdust or some other more or less imperfect insulation. Most of these materials disintegrate, rot, become foul and last but a little while.

The National Fire Proofing Company has long experimented with insulations and has just put upon the market an insulating lining brick that is next to perfect, if not the ideally perfect material we have all been hoping for. It is a brick to all intents, but one so waterproofed and so burned that forty-five per cent of the volume is confined air and its specific gravity is 0.90 and its ultimate strength in compression 750 pounds per square inch. It floats, it absorbs no moisture, it is everlasting, can be used and put into the wall in the one operation of building, for it can carry a very considerable load. It is a notable and long needed contribution to the building art. The National Company calls it terra cotta cork or insulating building blocks.

CEILINGS OF PENNSYLVANIA RAILWAY STATION, NEW YORK CITY.

THE concourse ceilings of America's greatest railway terminal, the Pennsylvania at New York, McKim, Mead & White, architects, of which we illustrate a small portion of the arcade, are another example

DETAIL FOR SOUTHERN BUILDING, WASHINGTON.
Executed in terra cotta by Atlantic Terra Cotta Company.
D. H. Burnham & Co., Architects.

of Guastavino construction. The adaptation of the vaulting in continuation with the ornamental steel work is one of the interesting features of this building. The ceilings have a white glaze surface.

DURABILITY OF STEEL CONSTRUCTION.

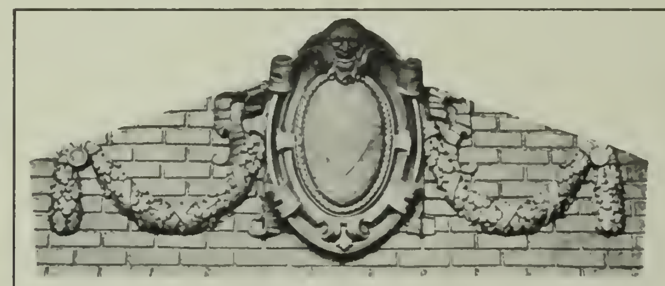
MR. F. J. T. STEWART, superintendent of the Board of Surveys of the New York Board of Fire-writers, has furnished some interesting data in regard to the effect of time on the steel skeletons of skyscrapers. The observations were made during the demolition of the Gillender Building, New York City, and at the Ames Bolt Works in Jersey City while the columns and parts of the structure were being dismembered. The inspection of the steel work indicated that the buildings were in practically as good condition as at the time when they were erected. Some evidence of corrosion with slight pitting was observed, apparently due to defective column covering which permitted dampness and other atmospheric conditions to penetrate to the steel work. The examination tends to show that a covering of cement mortar protects steel from corrosive influence better than any form of paint, and that it is important to paint the steel both at the mill and after being erected at the building before the cement coating is applied.

DETAIL OF GARDEN AT MORRISTOWN, N. J.
Ferruccio Vitale, Landscape Architect.

PALACE OF THE POPES, AVIGNON.

CONSIDERABLE interest is being manifested over the successful restoration of the Papal Palace at Avignon, France. During the different epochs the interior of this monumental work was changed and much of its architectural beauty ruthlessly destroyed. In the pontifical chapel the original windows were bricked up while ordinary windows were cut through the solid walls irrespective of the general appearance. The walls of the structure were lime-washed at least twice a year and staircases with no dignity or style were built throughout. By accident the frescoes of former ages were discovered, and the Commission of Historic Monuments entrusted the task of renovation to M. Yperman of Bruges. As a result fresco paintings consisting of six separate themes have been preserved, including some remarkable examples of the fourteenth century.

DETAIL BY THE NEW JERSEY TERRA COTTA COMPANY.
Warren & Wetmore, Architects.



DETAIL BY SOUTH AMBOY TERRA COTTA COMPANY.
York & Sawyer, Architects.

CEILING PANEL IN MAIN LOGGIA, STATE EDUCATIONAL BUILDING, ALBANY, N. Y.
Executed in white, cream and light blue terra cotta by Atlantic Terra Cotta Company.
Palmer & Hornbostel, Architects.

A monumental door, highly executed, has also been discovered along with other architectural features which evidence the skilful work of former French artists.

PANAMA-CALIFORNIA EXPOSITION.

JOHN C. OLMSTED of Olmsted Bros., architects, is in San Diego, California, under contract to the Panama-California Exposition to design the general character of the permanent buildings of the exposition and to advise regarding the landscape features of Balboa Park, which is to be the site of the exposition. The improvement of Balboa Park is preliminary to the Panama-California Exposition, to be held in San Diego in 1915, ostensibly in commemoration of the completion of the Panama Canal, but practically as a means of exploiting the resources and opportunities of the Southwest, Mexico, Central and South America. The first buildings to be erected under the supervision of Mr. Olmsted will be an auditorium, an arts building, a modified Greek theater and a stadium. These with their gardens, courts and grounds will occupy about 100 acres, and will form the nucleus for the further improvement of the park, which contains 1,400 acres of land admirably fitted for park purposes.

CONCOURSE OF PENNSYLVANIA RAILWAY STATION, NEW YORK CITY.
Vaulted ceiling of Guastavino construction.
McKim, Mead & White, Architects.

MOVING A CHURCH TOWER.

THE remarkable feat of moving a church tower in order to enlarge the original structure is being accomplished at Bocholt, Belgium. The work is under the supervision of two American engineers and the vast undertaking occupies only eight workmen. New foundations have been prepared for the tower some 30 feet away, to which machinery has been constructed for its transport. The tower dates from the fourteenth century and weighs approximately 3,000 tons. The tower was raised by the insertion of a movable platform over steel cylinders which in turn move along a railway line. During the first six days the tower was moved 64 inches. The remarkable success attached to this endeavor has led the engineers to propose a similar method to the Italian Government for removing and placing new foundations under the Tower of Pisa.

AUTOMOBILE SALES BUILDING, CHICAGO.
Cream enameled terra cotta trimmings made by the Northwestern Terra Cotta Company.
Holabird & Roche, Architects.

BRONZE DOORS FOR CAPITOL.

THE doors for the Western Entrances of the National Building at Washington have now been completed and are to be

DETAIL OF HOTEL, BALTIMORE.
By Conkling-Armstrong Terra Cotta Company.
Joseph E. Sperry, Architect.

placed on public view in the Corcoran Gallery of Art. They are cast in bronze and are the work of L. Amatois, the artist, whose design was declared by the board of judges to be the most meritorious. The doors designed by Amatois represent the apothesis of America and contain designs which bring the history of the nation down to the present time. The panel in the transom of the doors shows an allegorical figure representing America seated in a chariot and drawn by lions led by a child, symbolical of the superiority of the intellect over brute force. Following the chariot are figures representing education, architecture, literature, painting, music, sculpture, mining, commerce, and industry. On one side of the transom is a statuette of Thomas Jefferson, and on the other side Benjamin Franklin. The medallions at the corners represent Peabody the educator philanthropist; Emerson the sage, philosopher and thinker; Horace Mann the educator, and Johns Hopkins the merchant philanthropist. Below the transom are eight panels in relief, four on each side. These panels depict allegorical representations of jurisprudence, science, art, mining, agriculture, electricity, engineering, naval architecture, and commerce. On the sides are statuettes of famous Americans.

BELNORD APARTMENT BUILDING, BROADWAY, NEW YORK CITY.
Exterior and courts of light gray Kittanning brick, furnished by Pfotenhauer-Nesbit Company.
Hiss & Weeks, Architects.

SKYSCRAPER LIMIT IN CHICAGO.

THE City Council of Chicago has decided that 200 feet will be the maximum height of buildings hereafter in that city. The present building code limits the height to 260 feet. The new provision will go into effect July 1, 1911, but the council has agreed to give those who have planned to erect skyscrapers in the down-town district a longer respite.

ENTRANCE TO AN APARTMENT, NEW YORK CITY.
Architectural terra cotta made by New York Architectural Terra Cotta Company.
Schwartz & Gross, Architects.

FIRE PROTECTION CONFERENCE.

A CONFERENCE on fire protection and equipment of buildings and cities was held in Philadelphia under the auspices of the local chapter of the A.I.A. Representatives were present from the telephone and insurance companies, the Engineers' Club, the T Square Club and the fire companies. Mr. H. P. Onyx, representing the insurance companies, dwelt upon the point that there will never be a curtailment of the enormous fire losses in our country until the subject of fire prevention and protection has received the same consideration by the general public that has been given to the stamping out of contagious diseases.

IN GENERAL.

The Architectural League of New York City announces the following competitions for the season 1910–1911: A prize of $50 for a Mural Fountain to be treated architecturally with sculpture and mosaics, together with a special prize of $300 for the best design submitted by an architect, sculptor and mural painter in collaboration.

The twenty-sixth annual exhibition of the Architectural League of New York City will be held in the building of the American Fine Arts Society, 215 W. 57th street, from January 29th to February 18th inclusive. The league reception will take place Saturday, January 28th, from 3 to 6 P.M. Public lectures will be given on Wednesdays, February 1st, 8th and 15th.

It is to be hoped that all members of the A.I.A. will attend the next annual convention of the American Institute of Architects which will be held in San Francisco, Cal., on the 17th, 18th and 19th of January, 1911.

The Cleveland Chapter of the A.I.A. and the Cleveland Architectural Club will hold theirannualexhibition in the Engineers' Building, Cleveland, from December 19th to the 31st, 1910.

The Atlantic Terra Cotta Company will furnish terra cotta for the Knickerbocker Trust Company, New York City, McKim, Mead & White, architects; polychrome terra cotta for the Hartman Theatre and Office Building, Columbus, O., Richards, McCarty & Bulford, architects; polychrome terra cotta for the Vanderbilt Hotel, New York City, Warren & Wetmore, architects; terra cotta for the Savannah Bank & Trust Company, Savannah, Ga., Mowbray & Uffinger, architects.

HOUSE AT CLEVELAND, OHIO.
Roofed with combination shingle tile made by Ludowici-Celadon Company.
Watterson & Schneider, Architects.

The architectural firm of Warren & Welton, Birmingham, Ala., has been dissolved. Mr. William Leslie Welton of the above mentioned firm will continue the practice of architecture at 1209 Empire Building. Manufacturers' catalogues and samples solicited.

The dark red stain furnished by Samuel Cabot, Inc., is being used in Buffalo with marked success in making the new brick of additions to buildings similar in appearance to the brick in the old parts.

W. D. Richardson, one of the best known experts on clay manufacture in this country, has been appointed general manager of the brick manufacturing business of the Ohio Mining & Manufacturing Co., at Shawnee, Ohio.

"Tapestry" brick, furnished by Fiske & Company, Inc., was used in the garden at Morristown, a detail of which is shown in this number of THE BRICKBUILDER.

COMPETITION FOR A HOTEL IN AN AMERICAN CITY OF MODERATE SIZE.

FIRST PRIZE, $500. SECOND PRIZE, $250. THIRD PRIZE, $150.
FOURTH PRIZE, $100. HONORABLE MENTIONS.

COMPETITION CLOSES AT 5 P.M., MONDAY, JANUARY 16, 1911.

PROGRAM.

THE problem is a HOTEL OF MEDIUM SIZE, planned to meet the ordinary demands of a small American city. The site is assumed to be at the corner of two intersecting streets; the lot ample in size to accommodate the building and practically level.

The size and shape of the building are left entirely to the designer, except that not less than one hundred and not more than one hundred and twenty-five sleeping rooms are to be provided above the second floor. At least one-half of the sleeping rooms are to have bathrooms and the others may be provided with toilet and shower accommodations.

The ground or first floor plan is to provide the usual accommodations which are necessary in a hotel of this size.

The second floor plan may be given over in whole or in part for family suites, reception rooms, small meeting rooms, etc., etc.

The upper floor plan should provide for a large social hall to be used for banquets, dances, and similar functions. In connection with this social hall, and on the same floor, there should be provided suitable reception rooms, coat rooms, smoke room, service rooms, toilet rooms, etc., etc.

A roof garden may or may not be incorporated in the design.

It is assumed that the basement plan provides the necessary space for mechanical equipment, storage rooms, kitchen, lavatories, barber shop, and perhaps a rathskeller, but the plan of this floor is not required.

The exterior of the building is to be designed entirely in architectural terra cotta, and it is suggested that at least portions of the walls be treated in color.

The chief object of this competition is to encourage the study of the use of architectural terra cotta. There is no limit set on the cost of the building, but the design must be suitable for the character of the building and for the material in which it is to be executed.

The following points will be considered in judging the designs:

A. The general excellence of the design and its adaptability to the prescribed material.
B. The intelligence shown in the constructive use of architectural terra cotta.
C. Excellence of plan.

DRAWINGS REQUIRED.

On one sheet, the principal elevation drawn at a scale of 8 feet to the inch. On the same sheet, the first and second floor plans, a typical bedroom plan, and the upper floor plan, drawn at a scale of 16 feet to the inch; also a small sketch plan of the roof garden if that feature is provided for. On this same sheet, if space permits, give sketch of an interesting interior.

On a second sheet, the elevation of secondary importance drawn at a scale of 16 feet to the inch, and a sufficient number of exterior details drawn at a scale of ½ inch to the foot to fill the sheet.

The details should indicate in a general way the jointing of the terra cotta and the sizes of the blocks. The color scheme is to be indicated either by a key or a series of notes printed on one of the sheets.

The size of each sheet (there are to be but two) shall be exactly 36 inches by 24 inches. Strong border lines are to be drawn on both sheets, 1 inch from edges, giving a space inside the border lines 34 inches by 22 inches. The sheets are to be of white paper and unmounted.

All drawings are to be in black ink, without wash or color, except that the walls on the plans and in the sections may be blacked-in or cross-hatched.

Graphic scales to be on all drawings.

Each set of drawings is to be signed by a *nom de plume*, or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat, or rolled (packaged so as to prevent creasing or crushing) at the office of The Brickbuilder, 85 Water Street, Boston, Mass., charges prepaid, on or before January 16, 1911.

Drawings submitted in this competition must be at owner's risk from the time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The prize drawings are to become the property of The Brickbuilder, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names, ten cents in stamps.

The designs will be judged by three or five well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

The manufacturers of architectural terra cotta are patrons of this competition.
The competition is open to everyone.

THE ARCHITECTURAL REPRINT

SAMPLE PLATE FROM THE GREEK AND ROMAN ORDERS, BY MAUCH

SEE OVER

GEBÄLK, BASIS UND CAPITAEL DER KORINTHISCHEN ORDNUNG

Vom Tempel des Jupiter Stator auf dem Kuhfelde zu Rom

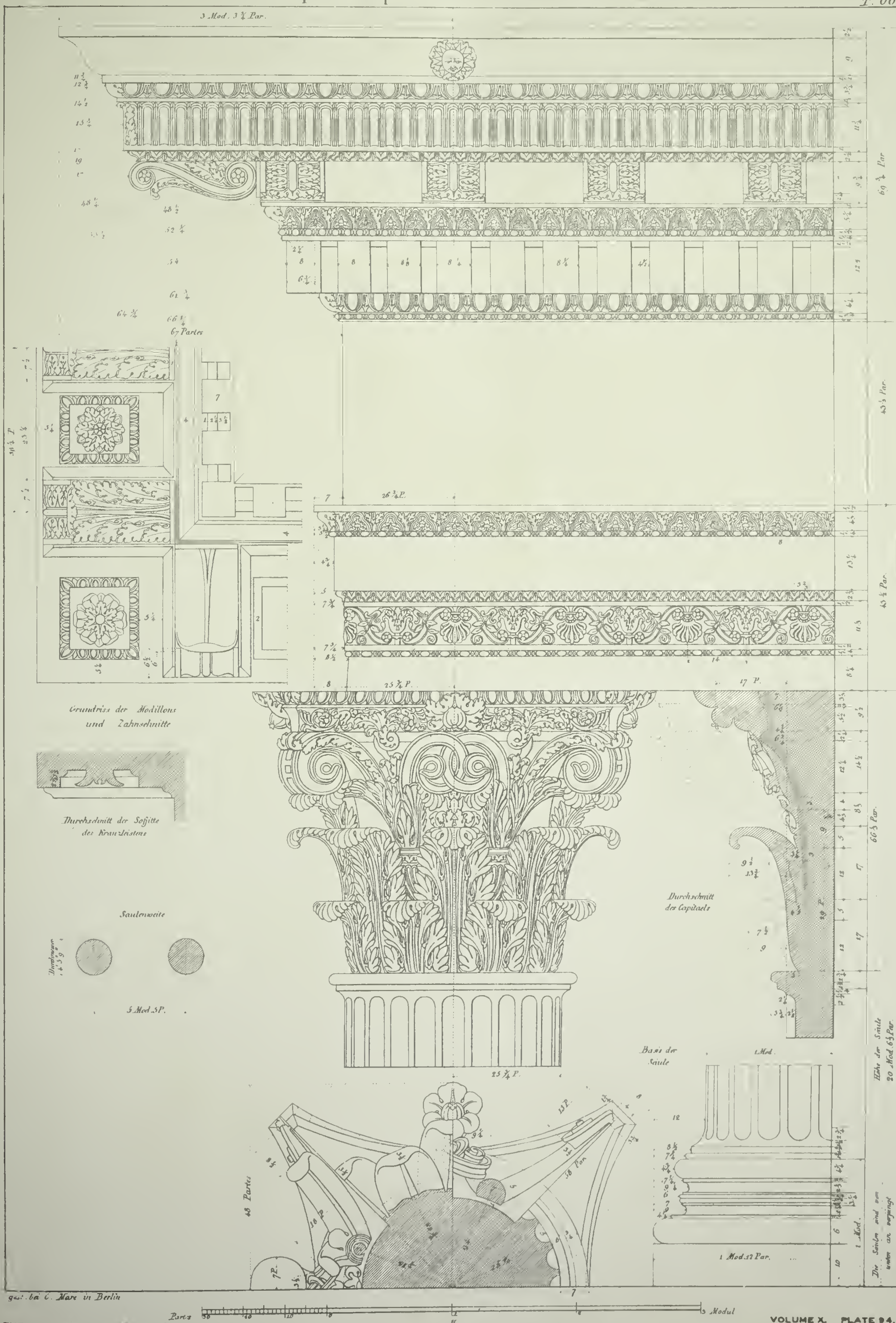


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Plate 66.

FROM THE TEMPLE OF JUPITER STATOR.

Near the original principal forum at Rome, and near the ruins of the Basilica Julia, stand three columns, with a portion of the entablature, from the peristyle of a Corinthian Peripteral Temple of 8 and 13 columns. These three columns are from one of the long sides and stand on a common foundation of 6.28 meters in height. For a long time they were considered as the remains of the Temple of Jupiter Stator, or Castor and Pollux. The later explorations, however, have established these ruins to be of the Temple of Minerva, which was erected of Pentelic marble by Domitian about the end of the first century A. D.

The scant remains indicate the majesty and beauty with which the entire structure was clothed. The architecture is of great originality, not overloaded, and of noble proportions and exquisite execution.

The leafwork of the capital has more spirit than that on the Pantheon. The volutes are larger, of splendid form and more decorative, those in the center being entwined. Out of the stem from which they spring also grows a fine ornament which spreads itself on the surface of the abacus.

The entablature as a whole is of strong proportions and still not heavy, while the details and ornamentation, of admirable character and relation, are arranged with a fine balance and the dominating members stand in excellent harmony with one another. In order that the wide corona should not appear too massive, it is decorated with an upright row of leaves which actually remind one of the Roman name of this member, corona. The dentil member is here divided into dentils. The minor mouldings are considerably subordinated, and enriched with rare taste. The flower band decoration of the middle fascia of the architrave seems out of place. The soffit of the architrave is found on Plate 87.

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